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CAR ACTION

THE WORLD'S LEADING R/C CAR MAGAZINE

February 1995

BIG BONUS

OFF-ROAD BUYERS' GUIDE

2WD BUGGY GUIDE

Hot 2WD
tuning &
off-road
driving
tips—p. 79

Pound Pavement!

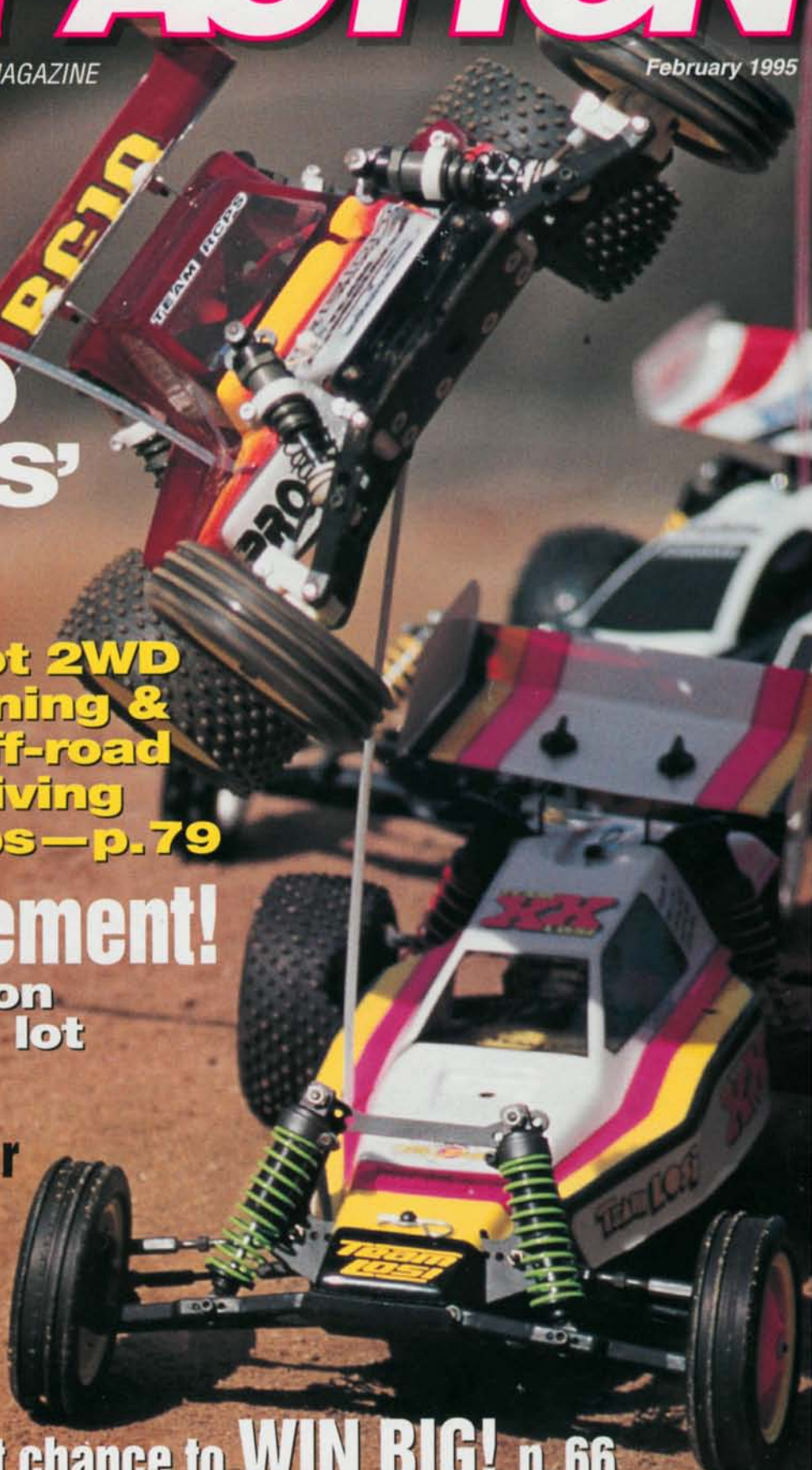
Killer conversion
for the parking lot

Thrash-Tested

- ◆ TAMIYA Globe Liner
- ◆ TRAXXAS SRT
- ◆ KYOSHO Impress



Last chance to **WIN BIG!** p. 66



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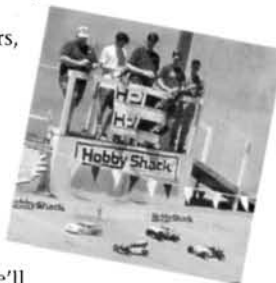
EDITORIAL

I just got back from the annual Radio Control Hobby Trade Association (RCHTA) show, which is held at the Rosemont Convention Center in Chicago, IL, and let me tell you, there's a ton of really cool stuff headed toward hobby shop shelves this year! In this issue, there's a feature on the show, and it gives you a sneak peek at all the latest goodies. But, before you rapidly flip to that page, I'd like to talk to you about something I saw at the show that was really neat; it's not only something that I feel we need, but it also sparked quite a few discussions and debates—CCR (cost controlled racing).

Big Fun, Small Price

This year, there will be more relatively inexpensive, parking-lot race series running than ever before.

- Tamiya continues their Championship race series in which you and your F1 or Indy car, 4WD or FWD sedan, or GTP or GTO car can race in a box stock or modified class.
- A new series this year is the Kyosho R/C Sport Racing Series. This one differs slightly from Tamiya's series in that there are two classes: an Open Class, in which you race anything you bring—an off-road or on-road car or truck; and a Super Sport Class, in which every racer competes with the same type car. So far, it sounds pretty cool.
- The Bolink Legend Race Series is taking off like you wouldn't believe. Basically, the Legend class was created to get inexpensive racing back into the picture for beginners. It also gives people a chance to try their hand at racing without spending a ton of money.
- Hobby Shack's Parking Lot Race Series allows racers to compete with F1 or Indy cars, all types of sedan cars, Bolink Legends and even gearbox-type cars and trucks, such as the RC10 and the Losi Jr. T.
- The newest is Trinity's Spec Car Series, in which the cars will be inexpensive, on-road pan cars that have spec foam tires, motor and battery and a NASCAR body. Other manufacturers are invited to participate, as long as they follow certain guidelines. We'll have more info on the series in an upcoming issue.



This is what this hobby needs—inexpensive, yet competitive racing! We must have something for beginners and enthusiasts who want to race without spending a ton of moola or spending the whole day (or even days) at the track.

At this point, I'd like to share some of the discussions I had about these race series. It appears that people are worried that racers, and some manufacturers, might push the envelope of this type of racing back into the high-dollar arena that's common with other forms of racing, and that could ruin this particular category. Already, I've heard reports about people trying to modify their cars in stock classes to get that extra "edge." Well, all I have to say is, that's totally lame, and if you can't race fairly in a box-stock class, you really don't deserve to be there.

Give people a chance who either can't afford certain hop-up parts, or who don't want to push costs even higher by using them. Don't ruin the race for everyone by cheating and then hope to get away with it. If you're the type who can't leave well enough alone, either get out of the stock class, or make sure your club or the series you race in has a modified class. If it's a box-stock class, keep it that way. Racers beware! Don't kill a good thing. Nuff said!

John Howell

We want to hear from you! Write, fax, or e-mail us over the Internet: Car Action, Air Age Publishing, 251 Danbury Rd., Wilton, CT 06897; fax: (203) 762-9803; e-mail: Chris Chianelli—chriscc@airage.com; John Howell (Doog)—johnh@airage.com; John Huber—jhuber@airage.com; Frank Masi—frankm@airage.com.

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News! Mike Wood Jr. takes Victory Lap in Pro-Mod at the Indianapolis Velodrome running ESP, Go Figure.

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LETTERS

ERRATA: In "What's New" in our January '95 issue, we printed an incorrect phone number for Grand Motorsports. The correct address and phone number are: Grand Motorsports, 9360 Newton Ave. N., Brooklyn Park, MN 55444; (612) 424-5535. We apologize for any inconvenience this might have caused.

HOW DOES HE GET THOSE TIRES SO WARM?

In the September 1994 issue of *Radio Control Car Action*, there's a report on the Tamiya Champion-ships running F1/Indycars. The winner [David Berger] in the race used 1/10-scale electric tire warmers! Yes, it's true. They not only looked smart, but they also seem like a really good idea, and I'd like to know where to get them. If anyone on the Internet has an address for him, or even better, knows anything about how to build electric warmers to preheat the tires, please let me know. We have a situation in the IC class (where we race) in which all kinds of traction compound and tire sauce are illegal; this is, of course, very good, but since the tires are of such importance when setting up a car before a race, anything that might improve traction is of interest.

ROLAND AALTO
Stockholm, Sweden

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+46 010 2137106

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Hey, David, if you're reading this, or if someone knows how to get some tire warmers, drop Roland a line on the Internet, or drop us a line and we'll pass along the info over the Internet.

Doog

A GASEOUS DILEMMA

I'm the not-so-proud owner of a Kyosho Outlaw Rampage. I've hopped it up somewhat with bearings and a tuned pipe—nothing major. Here's my dilemma: the engine starts fine. I let it idle for a minute or two to warm up. Although I don't know what the optimum needle and mixture settings are, the truck runs great for a minute or two—good speed and acceleration, smooth power build-up, etc. (I run a 10 percent mix, really mild). Then, after a couple of minutes, kapooey! Nothing! Nada! The thing simply stalls out for no apparent reason as if it suddenly stops getting fuel or something. After that, it takes forever to get the thing started again and the cycle repeats itself. I've tried adjusting the mixture control and the needle valve, but this does not seem to make a difference.

Is it possible that the vehicle is vapor-locking? Is the plug shot? I also noticed that my throttle servo tweaks when the engine is idling, making the idle pretty rough. I'm wondering if this could have anything to do with the problem. Would a different carb (like a slide-valve) help? Any comments and suggestions would be most appreciated!

ATBREAK@aol.com

First of all, have you gone through more than a gallon of fuel? If you have, there's a distinct possibility that you might need a new piston and sleeve combination. To check your piston and sleeve's tolerance, take the engine apart and push the piston up through the sleeve. If it's on the loose side, i.e., the piston goes all the way through the sleeve, you need a new piston and sleeve. If the tolerance between them is tight, then you might want to try a few more things:

1. Replace your glow plug and see if that helps.
2. I doubt that your engine is vapor-locking, but you may have your mixture set too lean; try to richen it up a bit and see whether it runs for a longer time.
3. Make sure that there aren't air leaks in the fuel tubing or pressure tubing. You might also have a leaking pressure fitting.

WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Rd., Wilton, CT 06897-3035. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

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Chris Chianelli: chris@airage.com.

John Huber: jhuber@airage.com.

Team NOVAK

TEAM SECRETS

GETTING TECHNICAL

What do all of those speed control (ESC) specifications mean? How do ESC specifications relate to performance? A technical look will help you read and understand ESC specifications.

INPUT VOLTAGE is the total number of cells that the ESC can handle.

ON-RESISTANCE is the measure of electrical resistance at full throttle at a given temperature. As the temperature increases, the on-resistance increases. A lower on-resistance will give you more punch and top-speed. Lower on-resistance also means the ESC will run cooler.

RATED CURRENT and **BRAKING CURRENT** are the maximum amounts of current that the ESC can handle at a given temperature. These ratings drop dramatically as the MOSFETs heat-up. The on-resistance is usually a better indication of the maximum capacity of an ESC than the rated current due to heat generation.

PWM FREQUENCY is the rate at which the ESC turns the motor on and off during partial throttle. At full throttle, the ESC stops switching and gives the motor full battery power (like replacing the ESC with a piece of wire). Higher frequencies of 2500 Hertz make for smooth throttle response and allow the motor to run more efficiently. Motor runs cooler and the brushes and commutator last longer.

WIRE SIZE is the gauge of the power wires that handles the motor current. Lower gauge number means larger wire diameter and therefore lower resistance. The resistance of the power wires needs to be considered for the total on-resistance of the system.

CURRENT LIMITERS allow the ESC to limit the current that the motor can draw upon acceleration. This allows you to run hotter motors with the same run-time by eliminating high, inefficient current spikes. Current limiters also make the car easier to drive by reducing wheel spin.

OVERLOAD PROTECTION is used to protect the ESC from applications beyond its electrical operating range. Thermal protection senses the temperature of the power MOSFETs and reduces or shuts-down the throttle.

REVERSE VOLTAGE PROTECTION protects the ESC from being damaged if the battery polarity is accidentally reversed. Novak's exclusive Solid State protection eliminates the use of inconsistent fuse protection without a diode voltage drop.

Team Novak welcomes your comments and secrets!

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LETTERS

As for your throttle servo glitching a bit: I really don't think that's adding to the problem, but I'd look into what's causing it. Check the gap between your pipe and header. Are the two rubbing? If so, that could cause some glitching. And don't worry about the carb; the barrel type that's on your engine should be fine. *Doog*

TALKIN' 'BOUT THE REVOLUTION

After I bought my Tamiya parking lot racer, I had this extreme urge to take it off-road. When I was cleaning the mud off it, it hit me: wouldn't it be cool if it could handle some mean off-road jumps and still be fast enough to race with the faster on-roads? That would be great for people who would also like to burn up the road without having to change tires and shock travel. I thought, "Hey! This could revolutionize R/C racing!" Plans for taking over the racing world soon left my head when I realized that all I had was an idea—and a pen and paper. Any comments? (I love your product reviews, by the way.)

JOHN STITELER
Portland, ME

John, I hope you aren't running an F1 car on dirt! If you want to run on pavement and dirt, look at rally cars. They have the suspension to handle the rough stuff, yet, with the right tires, they're perfect for pavement. Front-wheel-drive cars could also be used for off-road if you installed rally-block tires! *John*

STICKER SHOCK

Some of the cars and trucks featured in your magazine have *Car Action* decals. I've tried using the tips from one of your issues to create my own decal, but they don't appear as good as your magazine pictures. I've searched high and low for your decals in almost every hobby store, from Washington to Oregon, to no avail. I would appreciate it very much if you could send me some *Car Action* decals, or tell me how to get some. It would be an honor to advertise your company name on my RC10T and RC10GT. Besides that, my trucks will look totally cool.

AMMAN M. VERZOSA
Federal Way, WA

Well Amman, if you want some *R/C Car Action* stickers, you can call our toll-free order line—(800) 243-6685—and get some in all sorts of cool colors. And yes, your truck will look totally cool! *Doog*

PIPE PROBLEM

I have a Traxxas Nitro Hawk, and I recently installed a Dynamite pipe; I had to move the gas tank forward. I have the Image .12 engine installed right now. If I bought a KO Propo remote starting system, would it fit in the space left if I replaced the Image with an O.S. CZ-R. Also, will the MIP CVDs fit on my car? I also have had some trouble starting the Image with my new exhaust system installed. Can you help me with any ideas?

BRIAN PETROW

Brian, the KO starting system will fit your Nitro Hawk if you use the CZ engine. And as for the CVDs, MIP does make them for Traxxas cars and trucks. Your starting problems probably aren't related to your new exhaust; it shouldn't affect how the engine starts. Make sure you have the pressure tap on the pipe to help deliver the fuel!

John

LEGEND LOVER

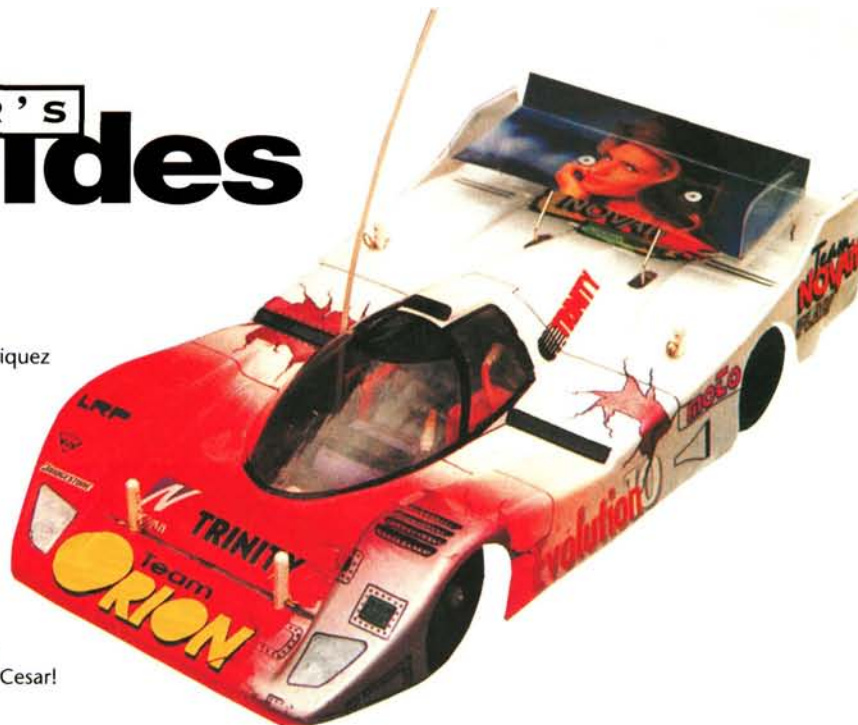
I've subscribed to your magazine for more than a year and have been enjoying the R/C hobby, especially now that I am disabled. I'd like more information about the Legend car. Does it run on regular 6-cell batteries and on any kind of motor? I have an RC10T, and I have five or six stock motors. Can I use them with the Legend? I have 6-cell batteries, but two of the cells are burnt out. I made a 4-cell pack with the rest, and I want to know whether I can use it with the Legend. I'd appreciate some information.

CARLOS NEME
Romeoville, IL

The Legend can run on any motor and on six or four cells. On four cells, speeds will be lower, but run times should exceed 4 minutes. As long as you run against cars using the same number of cells, you'll be equally matched. *John*

SPEED FROM SPAIN

This hot ride comes from Cesar Velayos Enriquez of Avila, Spain. His Trinity Evolution 10 is equipped with a Sanwa SRM-531 micro-servo, a Speedworks Topaz 11x3 motor, a Novak 410 ESC, an NER-3 FM receiver, Team Orion P-170 cells, Airtronics Caliber radio gear and an HPI Jaguar XJR-14 body. Cesar made the custom rear wing out of a plastic photograph of his favorite model. Cesar tells us that he is the president of his local R/C club, and he and his friends run their cars in local parking lots—at least until they find a circuit. Good luck, Cesar!



PROUD PAPA

Aaron Horton, a mechanical engineering student at RPI, in Troy, NY, sent us this photo of his "babies." His Tamiya Mercedes-Benz features a Novak Rooster speed control, a Novak NER-3 FM receiver, full ball bearings, a Trinity Ruby 16 Triple motor, a Trinity team battery and a stock Airtronics steering servo. He custom-built the drive shaft out of aluminum tube because he didn't like the flexing of the original wire. Aaron's RC10T is equipped with a Tekin TSC 610-R speed control, a Novak NER-3 FM receiver, a Motor Man 14 Triple motor, a Motor Man SCRC 1700 matched battery, a Robinson Titanium Gold (16-tooth) pinion and a stock Airtronics steering servo. He uses an Airtronics CS2P FM radio. All of the painting and decals were done by Aaron. The proud new R/C father feels his babies really smoke 'em!

"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah of Radio Controlla chooses your photo, you'll receive a 6-month subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the fourth annual "Reader's Ride of the Year Contest" in the fall of 1995. Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.

TRICK TRUCK

This stylin' Traxxas LS-II truck belongs to Aaron Chock of Pearl City, HI. It has been modified with a Reedy Force II stock motor, a Novak 410-M5, a Futaba Magnum radio, Losi Gold, step-pin rear tires and Associated 7870 front tires. A ton of its parts have been dyed in a combination of purple and yellow. Aaron plans to race his truck in the very near future.



SUPER MOD

Brandon Blakey's RC10T has been modified with a Novak 410-M5 ESC, a Reedy Sonic modified motor, a Futaba Magnum Sport radio system with a Futaba receiver and steering servo, Pro-Line tires, a Dahms Commando body and a 7-cell Dynamite battery pack. Brandon, who lives in Elizabethtown, KY, plans to race his truck at a track near his house. Maybe he could go to Hawaii, look up Aaron Chock, and the two could start racing together.

BIGFOOT HAS BEEN SPOTTED

Trevor Bristow of Anchorage, AK, sent us this photo of his trusty Tamiya Blackfoot. Trevor's 'Foot has been modified with a Novak ESC, a Speedworks Monster Mash motor, a Futaba receiver and a 2PBKA radio. According to Trevor, he mainly uses this truck to run with his friends and their cars. The other cars in his stable include a Kyosho Double Dare and a Tamiya Frog.



TOP RIDE

Adrian Khaw of Malaysia sends us this photo of his Tamiya Top Force. This hot ride is equipped with a Tekin 411P speed control, a Reedy Mr. S motor and an XL2P radio. Adrian's Tamiya sports a fantastic paint job, and he tells us that it's an easy car to drive.



THE LEAN, MEAN GREEN

Fred Bronson of Vancouver, WA, sent us this photo of his brand-new Tamiya Nissan Skyline GT-R Nismo. Fred has modified his car with a Trinity Green Machine II stock motor, and he plans to add a complete set of ball bearings, a Novak M1 ESC and maybe even tinted windows. Controlling the car are a Futaba Magnum Jr. radio system and two S148 servos.

TROPICAL HEAT

Chris Stefanowitz of Cortlandt Manor, NY, shows off the newest addition to his R/C collection—the Inferno ST. Chris's ST has an O.S. RF-B .21 engine connected to a Paris AL 650 pipe. Controlling his car is a Futaba 2PD Magnum radio with dual S9301 Futaba servos. Chris says that he used full ball bearings throughout the ST's construction to keep everything running smoothly. He used bottled paints and spray cans to complete the paint job, which he claims was inspired by an article in *Car Action*. Glad to be of help, Chris!



THREESOME

These three hot rides come from Bill MacKinnon of West Springfield, MA. The RC10T on the left is equipped with a Trinity Green Machine II, an MIP CVD kit, a Novak NER-3 FM receiver and 410 M1 ESC, a Futaba S9201 servo and a PSE Killer-T body. The RC10 Worlds car has an MIP CVD kit, a Trinity Green Machine II, a Novak 410M1 ESC and an S9201 servo. The Bolink Legend on the right is equipped with a Futaba S148 servo, a Novak Rooster ESC, a Trinity

Green Machine II and a Novak NER-3 FM receiver. Bill tells us that the truck and buggy are reserved for use at the R/C Madness track in Enfield, CT, and the Bolink Legend finds its home on the streets of his neighborhood.

In search of fun
and glory, cause
life's too short
to be a sheep • by Chris Chianelli

INSIDE scoop



Tamiya's new Mini Cooper is the smallest of their 1/10-scale line. This should come as no surprise, considering that the full-scale Mini wasn't much larger than a carnival bumper-car. Along with the Lotus-7, however, this little 4-cylinder-powered roller skate was a Jim Connor parking-lot circuit champion; so

show a little respect. The other cool thing is its versatile chassis. The front and rear suspension/drive parts are interchangeable, so the car can be built in front-wheel-drive or rear-wheel-drive configurations. (The full-scale is front-wheel drive.) With two front drive/suspension assemblies, you can build a "Monster-Mini" with front and rear motors! This tiny thing should fly with one 540 motor; just imagine what it will do with two! As usual, Tamiya has paid strict attention to scale detail and chrome work, so the Mini Cooper will look great on the mantel-piece when it isn't being run.

Also shown is Tamiya's

the
mini



& AN INDY



latest Indycar, a beautiful rendition of Bobby Rahal's Miller Draft Lola/Honda car. Watch for both of these in future reviews.

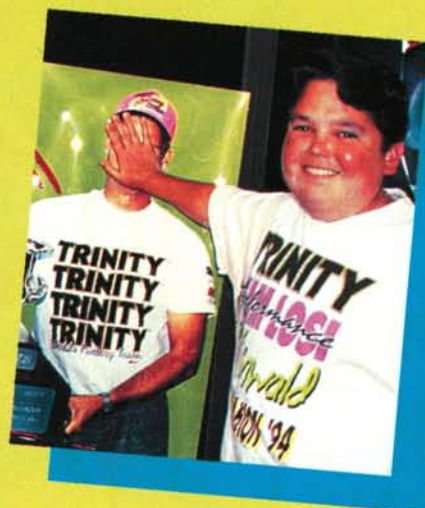
A Toast with Tamiya

Tamiya Inc. and Car Action at Chicago's famous Morton's Steak House. From left: Tamiya America President Mark Tamiya, me, Tamiya Inc. President S. Tamiya "Shacho" (the top man), Tamiya America Executive V.P. Jim Warashina. And no, my coffee was not spiked with sake.



Move Over, Magic: The B.K. Is On His Way

On his way—and already back, by the time you read this—to the 1/12-scale Nationals in Cleveland to stake his claim in the on-road arena. Oh, in case you haven't heard, Brian Kinwald is without doubt the confirmed "King Of The Dirt Road." Driving his Trinity-powered Team Losi Double-X buggy and Double-XT truck, Brian has swept the circuit by claiming the NORRCA Modified Truck class and Modified 2WD Buggy class, and now the ROAR Modified Truck class and Modified 2WD Buggy class. Oh, by the



way, he also took 4WD Modified Buggy with his Yokomo. Let me think, did I forget anything? Whoops! I did. He TQ'd 2WD and 4WD Modified at the ROAR event. Brian has smoked the competition so consistently this past year that maybe we should call him the B.K. "Broiler."

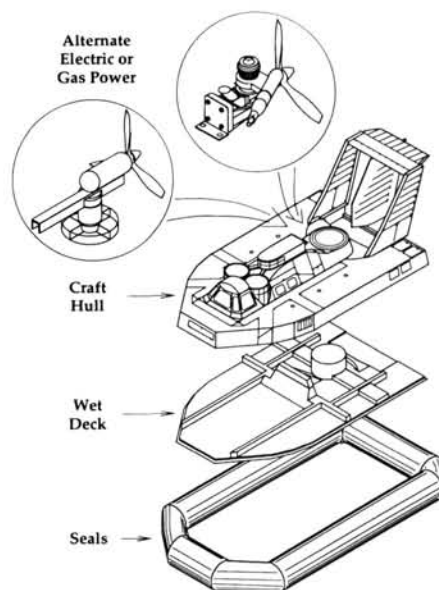
Obviously, Brian Kinwald has made the off-road world his world. Will he conquer the carpet, too? Has the very pretty Mrs. Johnson made the Magic Man's life so blissful and comfy that he has lost the fighting edge? Do I sound like an over-dramatic idiot?! I can confidently respond that yes, indeed, I do. For the answers to questions 1 and 2, tune in next month!

I'll be back!

INSIDE scoop



In reality, the Kinetics SK-5 R/C hovercraft rides up off the road, or the ice, or the water, or any other surface that lies ahead. Kinetics is actually involved with designing full-scale hovercrafts for the military—and guess what?—they use R/C versions like this 1/24-scale, 25-inch model you see here for demonstrations to Congressional committees. The manufacturer simply figured; why not make them available to the modeling community? Available in gas and .05 electric versions. Re-create "Apocalypse Now" scenes at the local swimming hole! Prices range from \$129.95 to \$219.95 for a complete kit that includes a 2-channel radio. Contact Kinetics, P.O. Box 1071, Mercer Island, WA 98040; (206) 641-5611.



Off-Road Rambo

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Team Kinwald brings you new ways to go fast. The BuggyWald™ off-road modified motor delivers heavyweight performance on a lightweight budget. And, Kinwald "Hard Ones" hardened steel pinions turn out precision and long life like no other.

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Current IFMAR World Champion



The "Hard Ones"

Team Kinwald brings you the new "Hard Ones" off-road steel pinions. With a Zero Gravity™ design, each pinion is case hardened to a 58-62 Rockwell C hardness to a consistent depth of .0010". Only total destruction would cause tooth deformity. Last, a black oxide coating is applied to prevent rust prior to use. Kinwald "Hard Ones" are the longest lasting pinions available. In 48 pitch only, 12 - 27 tooth sizes. Only \$4.99.

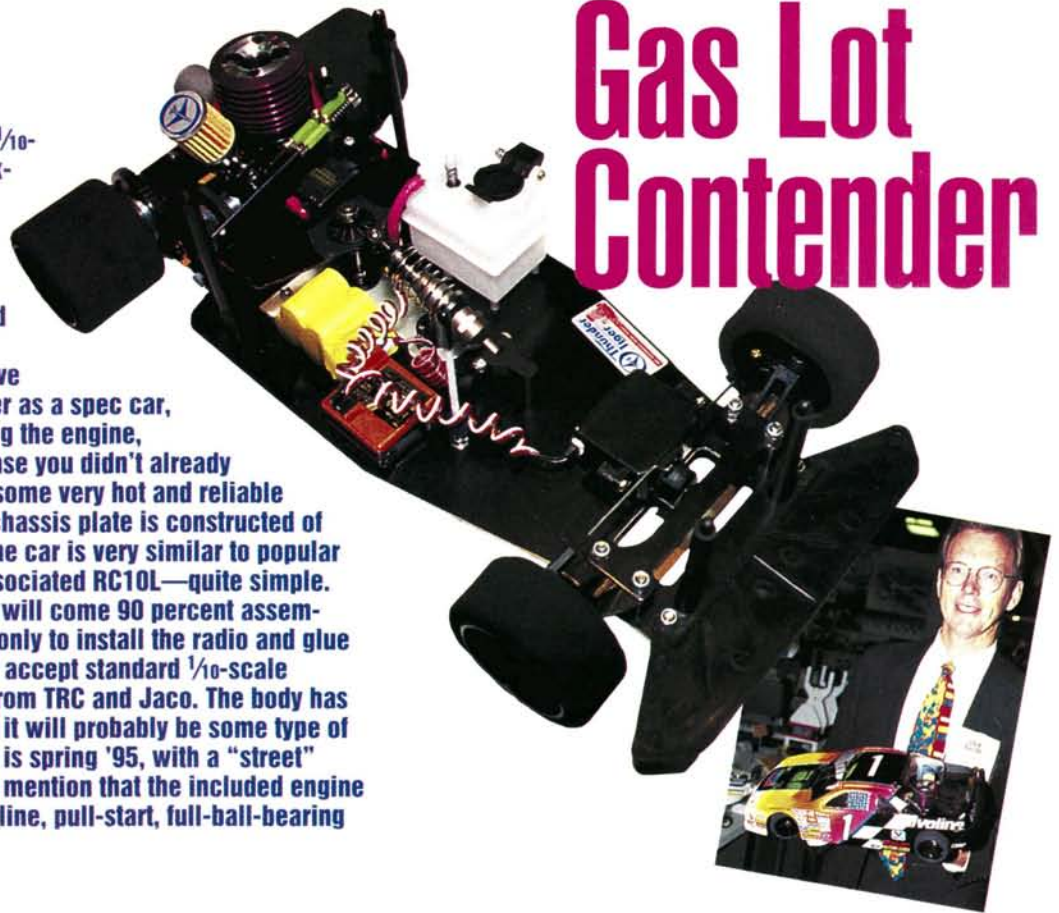


TEAM KINWALD BY TRINITY®

1901 E. Linden Avenue, #8, Linden, NJ 07036 ■ 908.862.1705 ■ Fax 908.862.6875

Gas Lot Contender

It's only a matter of time. A spec class for 1/10-scale on-road gas parking-lot racing is inevitable. This yet-to-be-named 1/10-scale road racer from Tiger Racing, held here by Thunder Tiger USA executive vice president Steve Ellison, is a perfect contender as a spec car, because everything, including the engine, comes with the kit. And in case you didn't already know, Thunder Tiger makes some very hot and reliable glow engines. Although the chassis plate is constructed of black-anodized aluminum, the car is very similar to popular electric pan cars like the Associated RC10L—quite simple. Simple is good. The new car will come 90 percent assembled. The modeler will need only to install the radio and glue on the tires. Yes, the car will accept standard 1/10-scale wheels and tires like those from TRC and Jaco. The body has not yet been determined, but it will probably be some type of sedan. Projected availability is spring '95, with a "street" price of less than \$200. Did I mention that the included engine is Thunder Tiger's top-of-the-line, pull-start, full-ball-bearing Pro .12 BZX? Well, it is.



Pro-Racer Silicone Shock Oil

"Whether you race at the North Pole or the new track in Hell, our oil stays true to weight."

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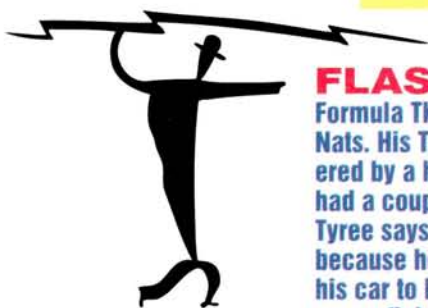
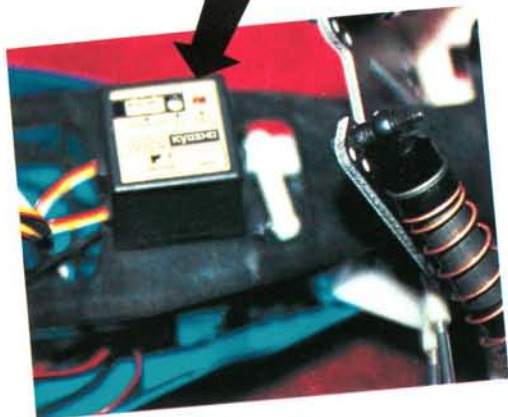
Gyro-Disco

Kyosho has developed a new gyro specifically for cars. Basically, the unit feeds in corrective steering, much as you would steer into a turn during a power slide. The Gyro, however, does this at a rate that's much higher than humanly possible. Sounds good—whoop-dee-dooos and twists!



Sound Alien Advice

The Klingon to our group editor-in-chief, Tom Atwood: "I'd be careful with that minox-o-swill stuff, earthling. We Klingons didn't always look this way."



FLASH! Novak's Tyree Philips won the Formula TK class at the '94 NORRCA On-Road Nats. His Tamiya Sauber Mercedes was powered by a handout stock motor, and he only had a couple of Tamiya options added to it. Tyree says he loves this type of racing class because he doesn't have to go crazy tuning his car to be competitive. He also loves the way a field of 10 F1 cars looks on the grid!

All-Terrain is its Game

Have you ever asked, "Why don't they make a tire good for the street and the dirt, like they do for full-scale 4x4s?" Well, they do. They're Pro-Line's new XTR Dirt Hawks II for serious back-lot burning and vacant-lot trailblazing. These treads are designed for all-out fun in dirt, mud, sand, or rough pavement. So, if you're tired of changing tires on your stadium truck, or on any other off-road vehicle with 2.2 wheels, get some XTR Dirt Hawks II and you'll be ready Eddy to go anywhere.



WHAT'S new

Replica Engines Model 97 Offenhauser

Made in 1/4 scale, this vintage (approximately 1940) twin-overhead-cam screamer sports a one-piece crankcase and cam (bore—0.750 inch, stroke—0.937 inch). It's pressure-lubricated and has spark ignition. Available in the spring of



'95, this engine, like all of Replica's offerings, is of museum quality and is produced in limited quantities. **Price—\$5,000 (excluding the transmission).**

Replica Engines, Top o' the Lake Rd. and So. Lake Michigan Rd., Rt. 1, Box 61B, Gulliver, MI 49840; (906) 283-3321; fax (906) 283-3325.

Kimbrough Products 32-Pitch Gears



Like all Kimbrough Products' gears, these 32-pitch gears for the RC10 GT and Losi HD are molded of 4/6 nylon, which is more than twice as strong as any other plastic used for R/C model car gears, and will withstand temperatures of at least 100 degrees.

Parts nos. and prices—245 (64-tooth, 32-pitch for Losi Hydra Drive), \$3; 246 (66-tooth, 32-pitch for Losi Hydra Drive), \$3; 247 (62-tooth, 32-pitch for Associated GT), \$3; 248 (64-tooth, 32-pitch for Associated GT), \$3; 249 (66-tooth, 32 pitch for Associated GT), \$3.

Kimbrough Products, 1322 Bell Ave., Unit 1C, Tustin, CA 92680; (714) 258-7425; fax (714) 258-7426.

New Era Models 1/4-Scale Oldsmobile Funny Car

This new funny car kit includes: a scale frame (stepped, triangulated, heli-arc-welded, 4130 chromoly); adjustable suspension system; scale-type body-mount system; 9-inch authentic, rear racing/drag slicks and scale front tires; 52cc Quadra pull-start engine; and New Era quick-change rear. Oldsmobile



and Firebird fiberglass bodies are available. Options include: New Era 1/4-scale (non-functional) blower and scoop, headers, wheelie bars, rear spoiler (Lexan), decal sets, tire decals, parachute pack, body fork, rac-

ing driver, helmet, custom wheels and a 1994 NE video catalogue.

Price—\$1,695.

New Era Models, P.O. Box 7378, Nashua, NH 03060; (603) 880-3453; fax (603) 888-8645.

Tekin Ultimate Speed Controls

Tekin's new TSC P-12 and TSC G-12 (GoldFET II)—the best performing, smoothest, longest running and most efficient speed controls by Tekin—are now available from dealers. An exclusive Throttle Priority Circuit guarantees maximum driver control under all conditions and a new Log/Anti Log mapping system gives a positive exponential response to the throttles and a negative one to the brake, so you get truly proportional controls and low lap times. Tekin's Quick Tune electronic setup allows precise tuning in seconds. These new speed controls are based on the '94 World Champion design of the legendary G2.

Part nos. and prices—TSC P-12, \$150; TSC G-12, \$199.

Tekin, 940 Calle Negocio, San Clemente, CA 92673; (714) 498-9518; fax (714) 498-6339.



PC/RC Products Temp Graph

This new, high-tech engine monitor displays head temperature in increments of 10 degrees, to allow simple, precise mixture setting by showing it relative to heat. The yellow and green bars indicate normal operation while the red bar indicates overheating. The Temp Graph is installed on the receiver battery and has a very low current draw.

Part no.—TG401; price—\$49.95.

PC/RC Products, 625 Landmark Dr., Arnold, MO 63010; (314) 623-2728.

New Era Models 1/4-Scale Supermodified

New Era Model's 1/4-scale Supermodified features: 23cc engine; heli-arc-welded, 4130, strong, tubular-steel frame; tubular-steel upper and lower control arms on the front; independent suspension and 4130 chromoly axle; adjustable gear ratios; precision ball bearings throughout; stainless-steel hardware; New Era heavy-duty shocks with a "fast-adjustment" feature; dual, inboard, ventilated disk brakes; fuel system; and authentic Racecraft race-proven tires. The kit includes all the nuts, bolts, washers and radio hardware you need. (Radio, servos, body and wings aren't included).

Special Introductory price—\$795.

New Era Models, P.O. Box 7378, Nashua, NH 03060; (603) 880-3453; fax (603) 888-8645.



Duratrax Duratrax Fuel Gun

Made of hard-anodized aluminum and brass, this fuel gun provides high-speed refueling capability; it fills a 125cc tank in less than 1 second! An automatic-venting system keeps fuel flowing freely and stops fuel flow when the tank is full. The fuel-level indicator—an exclusive feature—permits you to see how much fuel is left in the gun.

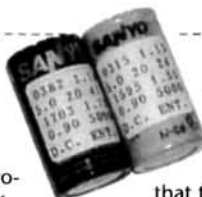
Part nos. and prices—DTXP0150 (fuel gun), \$64.99; DTXP0155 (replacement O-ring kit), \$4.99.

Duratrax/Great Planes Model Distributors, 2904 Research Rd., Champaign, IL 61826-9021; (217) 398-3630; fax (217) 398-0008.



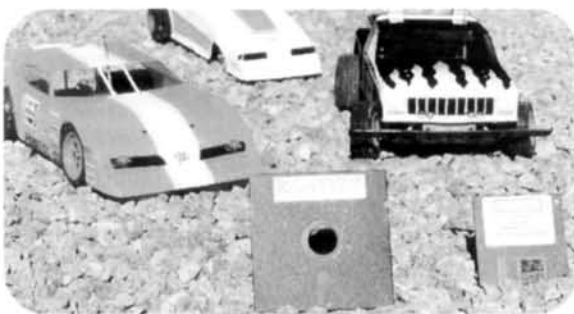
D.C. Enterprise Matched Cells

D.C. Enterprise provides racers with 4-, 6- and 7-cell matched packs of batteries—available in 1400 and 1700 mAh Sanyo



cells. They claim that their matching procedure is the finest around and that their cells will last longer and provide more power throughout a race.

D.C. Enterprise, (203) 838-9932.



Advanced Products R/C Speed Software

This easy-to-use software helps you to set up your on- and off-road R/C cars for the best run time, power, or speed. You input the scale, motor rpm, tire size, transmission, spur gear and pitch; a readout will display the actual and scale speed, correct gear ratio and final

drive ratios for all pinions. R/C Speed will also print out your charts and provide tuning and setup information. Use it for all IBM PCs (specify 3 1/2- or 5 1/4-inch disk).

Part nos.—RC-100 (3 1/2-inch disk), RC-200 (5 1/4-inch disk); price—\$19.95 plus \$2 S&H.

Advanced Products, P.O. Box 1193, Middleton, MA 01949; (508) 777-0380.



Novak Electronics Inc. Polaris Narrow-Band AM Receiver

Dust off those AM transmitters because AM is back! The Polaris AM, which offers unmatched performance on the AM band, is specifically designed for use with electronic speed controls, and it operates at a low voltage, which eliminates the chance of glitches and widens its range. Its features include narrow-band operation, three channels, an

external battery slot and surface-mounted components. The Novak Input Plug System is included (except with 75MHz models) to make it compatible with Futaba J, KO, JR and Airtronics plugs.

Part nos.—2227 (27MHz—Futaba J, KO, JR, Airtronics); 2275 (75MHz—Futaba J); 2075 (75MHz—Airtronics); price—\$90.

Novak Electronics Inc., 18910 Teller Ave., Irvine, CA 92715; (714) 833-8873; fax (714) 833-1631.

Hitec RCD Inc. HS-705MG 1/4-Scale Metal Gear Servo

The 705 is a 1/4-scale servo with three metal gears that can be used for the toughest applications you can imagine. It comes with top ball bearings and a metal ring, to protect the horn



from stripping. At 4.8 volts, torque is 160 oz.-in. at 0.27 second/60 degrees. You'll achieve 200 oz.-in. of torque if you use a 5-cell Ni-Cd battery pack. This is the servo to have if you're looking for power and durability!

Part no.—HSE0705; RSE705 (for versions with other types of connectors); price—\$69.95.

Hitec RCD Inc., 10729 Wheatlands Ave., Ste. C, Santee, CA 92071; (619) 258-4940; fax (619) 449-1002.

Alpine Motorsports Bergonzoni Mithos

This Italian-crafted car comes with many standard features, such as a Thorsen center differential, a graphite radio plate, fully adjustable front and rear suspension with stabilizing bars, double disk brakes and much more! The Mithos will accept most 1/8-scale .21 gas engines.

Price—\$500.

Alpine Motorsports, (714) 693-2930; fax (714) 693-2915.





TROUBLE SHOOTING

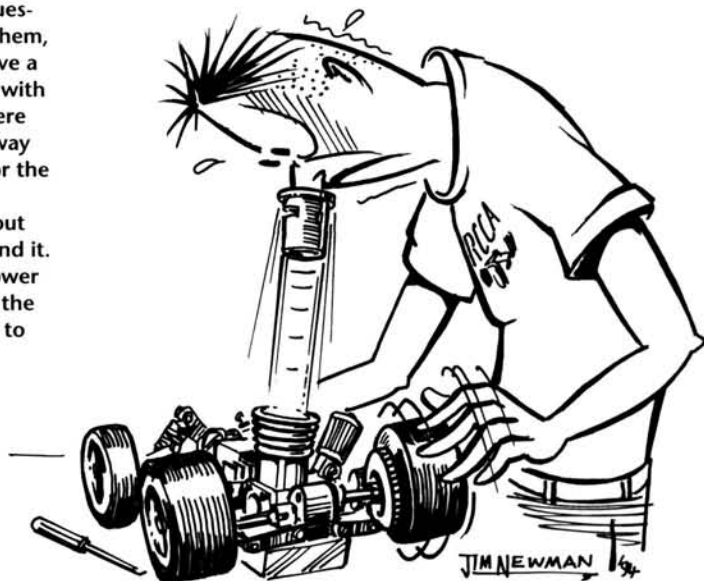
by John Huber

Sandmaster Sleeve

One afternoon, I was cleaning my Sandmaster, and I decided to clean the engine. I turned the engine over a couple of times, and the sleeve (the piece of metal around the piston) came out. I'm not sure if I put it in right, because now the engine doesn't start. It has compression, and I just put a new glow plug in. I have a GS-11, and I'm using 15 percent nitro. I've been thinking of getting an O.S. .12 CZ-R. Would that fit in my Sandmaster?

JAMES RANKIN,
Patchogue, NY

James, I called Great Planes about your questions. According to them, the sleeve should have a notch that will align with a pin in the case. There should only be one way to fit it back in. As for the CZ-R fitting into the Sandmaster: it will, but they don't recommend it. It has much more power than the GS-11, and the gearbox might blow to bits. Go for it if you want to, but consider yourself warned!



Time is not on my side

Help! I've got an Associated RC10T, and there's something terribly wrong. I've had it since Christmas, and I get terrible run time. I only get about 3½ minutes. I've tried everything. I've tried different motors, speed controls, battery packs, receivers, crystals and speed-control fuses. Nothing worked. Could the problem be something else or perhaps a combination of things? I can't figure it out. Please help. I would really appreciate it.
CLINT CANADY,
Aurora, CO

Clint, if you've tried all this, replace the connectors, too. If they're stock Tamiya-style connectors, they might be part of the problem. Replace them with Sermos, Deans or Race Prep connectors. After that, there isn't much else to check. Three and a half minutes isn't too bad, though. You can also try running a smaller pinion gear to gain more run time.

Nowhere Fast

I bought a Kyosho Toyota 4-Runner about two or three years ago. My problem is that the back tires push the car forward, and the front tires push it backward. I have a Novak 610-HRV, a Kyosho Mega 360 motor and a Futaba Magnum Sport radio. I've been very frustrated by this problem. Please help me. I love the magazine.

DUANE JARVIS,
Indianapolis, IN

Duane, I have a 4-Runner, and I was almost baffled by your letter. You must have a gear backward in one of the gearboxes. The car uses a ring-and-pinion gear system to turn the differentials, which turn the wheels. If the ring gear is to the right of the pinion, it will turn the wheels in one direction; if the gear is to the left, it will turn them in the opposite direction. Reread the instructions, and look at the gearboxes. Chances are that you'll simply be able to flip one of the diffs around to solve your problem.





Headless

I have a Kyosho Porsche 959 with a GS-21 CR pull-start engine. When I was replacing the glow plug, I noticed that the threads for the plugs had been stripped. Later, I went to all the hobby shops in my area and they said, "Kyosho doesn't make this engine anymore, and there are no spare parts." Is it true that Kyosho

doesn't make this engine anymore? Please help! I don't want to spend \$350 on a new engine just because of a stripped thread.

HENRY CHENG,
North York, Ontario,
Canada

Henry, I called Great Planes, and they said that they don't import this engine into the U.S., so you won't be able to find it through U.S. dealers. Try your distributors again, or give Great Planes Tech Support a call at (800) 637-6050; they might be able to find one for you. Good luck!

Slip shaft

First of all, cool mag! I'm still trying to get my mom to get me a subscription. I have a problem with my Kyosho Lamborghini Countach. The drive washer on my right rear hub won't stay in place. It keeps losing hold of the rear wheel shaft. I have tried to put Loctite on it, but it doesn't have any threads. So how do they stay on? How can I fix this problem?

RUBEN ALEJANDRO,
Indianapolis, IN

Ruben, the hubs are held on the shaft by a tapered fit. They have to be tightened to lock onto the axle. To help them grab, try lightly sanding the axle and the inside of the aluminum hub. Do it just enough to help them hold on to each other. Place the wheel over the hub, and begin to thread the nut onto the axle.

When the nut starts to meet resistance, the hub might start to slip again. Stick the flat blade of a screwdriver into the slot in the axle where the dogbone goes, and hold it there. Now you can continue to tighten the nut all the way.



ROLL YOUR OWN!

If you race with foam tires, you *need* a tire truer. **MAXMOD** offers several sizes to suit your budget.

Check these out!



**Bench
Racer
DC Truer
PN 10-003**

Our "Entry Level" model runs on 12 volts DC. Big performance for a small budget. Powerful enough for even 1/8 scale tires.

**Pro
Tire
Truer
PN 10-001**



20 pounds of pure muscle. Our top of the line unit. Massive torque with constant speed make short work of even the toughest tires. 120 VAC.



**Deluxe
Tire
Truer
PN 10-002**

Our most popular model. 71/2 pounds of power and accuracy. Its size makes it great for the racer who travels. 120 volts AC.

**Tire
Durometer
PN 40-001**



To really know your tires you need one of these. Accurately measures rubber hardness. Can be used on foam and cap tires.

MAXMOD tire truers include adaptors for 1/10 and 1/12 electric pan cars. Many other adaptors are available.

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Airtronics Contender

AIRTRONICS* ISN'T a giant in the speed-control marketplace, but their Contender—a direct replacement for a mechanical speed control—is worth looking into, because Airtronics products are of high quality and always competitive. It's available alone and as a package deal with new Airtronics radios.

CONTENDER CRUNCHIN'!

• **Test 1—Resistance**
With 12 amps of current flowing, I measure the voltage drop across the ESC and then

calculate its "on" resistance by dividing the measured voltage drop by 12. I measure resistance twice—along the full length of the motor wires and battery wires (including connectors) and 2 inches along them. The first reading helps me to determine an ESC's "on" resistance as it comes from the factory, and the second gives a standard reading with which I compare ESCs.

The Contender's printed-circuit boards are made of computer-grade epoxy/glass, all the solder joints look good, and the heavy solder on the copper circuit that connects the FETs helps to lower the "on" resistance, so current-handling capability is improved. (Another nice touch is that all of the leads that exit the case have shrink-tubing on them at the exit point to reduce the possibility of shorting.)

• Results

*Voltage drop along full length of wires: 0.44 volt—a resistance of 0.036 ohm.
Voltage drop 2 inches along the wires: 0.26 volt—a resistance of 0.021 ohm.*

This is not the world-class low resistance that's needed for serious racing, but this ESC has reverse, and that tells me that it's intended to be a direct replacement for a troublesome mechanical controller, or for use in a classy scale creation (scale cars need reverse for realism). It's about average for a reversing speed control.

With these resistance readings, I'd expect some ESC heating, especially if used with a modified motor. Fortunately, the Contender's substantial

built-in heat sink handles the heat.

• Test 2—Heat

I "cook" every controller I test by adjusting the resistor bank to pass 20 amps of current, jamming the throttle wide open and running the ESC for 15 minutes while it pumps a hefty 20 amps.

• Results

I sat back and waited for smoke! About 8 minutes into the test, the Contender shut off (current went to zero), and the heat sinks were quite hot—way too hot to touch comfortably. Its automatic cut-off prevented the Contender from overheating. Sure enough, after a brief cool-down (about 5 minutes), the Contender was back to normal, damage was zero, and it was defiantly running strongly at the end of my test session.

TIME TO HIT THE ROAD

Before installing an ESC, a complete reading of the instructions is vital. The Contender's instruction sheet covers the subject quite well, but I would have liked more detail and pictures on how to install the controller in a car and how to connect the wires.

Also in the instructions is a detailed description of how to reduce radio interference by installing three, 0.1-microfarad caps on the motor. The setup described is one that I've found works best: one cap going from each brush hood to the case, and a third from brush hood to brush hood. The supplied capacitor is a single 47-microfarad capacitor, which will also suppress radio noise, but the instructions don't explain that it is to be installed

from brush hood to brush hood. Also, when installing caps on a motor, be sure that the capacitor leads don't short to a metal surface, such as the ESC's case. If they inadvertently short out the battery, you'll see smoke and something will have been damaged. Where there's any chance of a short, I insulate the exposed lead with shrink-tubing.

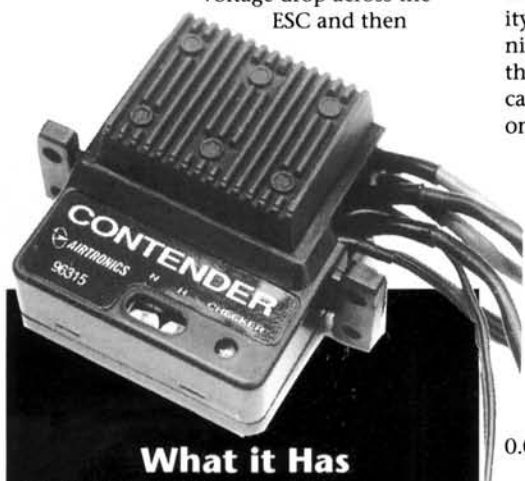
Even though the instruction sheet is a little "thin," the Contender was easy to install in my Kyosho Sideways because it comes with a complete set of connectors installed. In most cases, it will be easy to remove the original mechanical speed control/servo and replace them with the Contender. Just remember that any ESC needs plenty of cooling air.

Time for fun! With several battery packs charged and a Peak Performance modified motor mounted in my Sideways, I headed to the parking lot. The motor is geared for a run time of about 5 minutes on 1500mAh cells.

With this gearing and a modified motor, you can really burn rubber; the Sideways went screaming across the parking lot. Acceleration was good, top end was fast, and run times were about 5 minutes. Though this isn't a high-frequency controller, throttle response is very smooth, especially in the mid and slow speeds—truly a great joy after driving a mechanical speed control with its 2- or 3-speed, jerky throttle response.

Reverse was extremely weak—barely strong enough to reverse the car on flat ground. A check revealed that it has an adjustable trigger center. I usually have the trigger

(Continued)



What it Has

- Forward and reverse (0.5 second delay between them)
- 12 FETs (eight for forward; four for reverse)
- Auto temperature cut-off (prevents ESC from overheating)
- Built-in heat sink
- Built-in BEC
- Two adjustment pots—neutral and full speed
- Built-in pulse-checking LED
- Tamiya-style battery and bullet-style motor connectors installed
- Power on/off switch
- Built-in mounting lugs
- And a motor capacitor, motor wires with mating bullet connectors, a screwdriver for making adjustments, adjustment-hole seals and an instruction sheet.



SCOPING OUT

set to the 33-66 point, i.e., 66 percent of trigger travel is devoted to forward (more control over forward when racing). I adjusted the trigger for 50-50 travel between forward and reverse and readjusted the neutral and full-speed pots. (The Contender's pulse-checking LED is quite accurate and is handy for checking true neutral and full speed.)

With the trigger set for 50-50 travel and the controller readjusted, I turned my Sideways loose for the second run of the day. Reverse was still not ripping strong, but it would reverse the car.

The Contender has true brakes. When you first move the trigger toward reverse, there's braking action. Hold the trigger in reverse for 0.5 second or so, and the ESC kicks into reverse. This delay prevents you from slamming between forward and reverse—a maneuver that will soon rip out even the strongest gear train.

After every run, the heat sinks were approaching hot, but not hot enough to go into thermal shut-down—not bad, considering I was running a fairly hot modified motor and 5-minute gearing. I suspect that the key to the Contender's success is its massive built-in heat sink.

or change the plastic shell. If you do either of these things, be very careful, because the Airtronics pin pattern is different from all others. If you mis-wire the connector, you could easily destroy your receiver, steering servo and the Contender itself. The good news is that the instruction sheet has a detailed drawing and description of Airtronics' receiver connector pattern, and most other connector types are color-coded (red for positive, black for negative and white for signal).

I noticed that the Contender's motor and battery wires aren't color-coded, so if you ever need to replace the battery and motor connectors, be very careful. If you swap the battery and motor wires, you'll almost certainly have an explosion. My advice? Don't change these connectors. If you absolutely have to do so, label the wires securely before you remove the

Airtronics Contender

DIMENSIONS

Height w/heat sink1.03 in.
Width inc. lugs2.16 in.
Length1.84 in.
Weight2.8 oz.

TUNING

Access to controlsExcellent
Ease of adjustmentGood

LIST PRICE\$99.95

ELECTRICAL—

Manufacturer's Specs.

Max. voltage (7 cells)8.4 volts
Min. voltage (6 cells)7.2 volts
Max. current forward480 amps
Max. current reverse240 amps
Continuous current40 amps
Resistance0.009 ohm

TEST PARAMETERS

Voltage6 volts
Current12 amps

Voltage drop

—along length of wires0.44 volt
—2 inches along wires0.26 volt

*Resistance

—along length of wires0.036 ohm
—2 inches along wires0.021 ohm
BEC voltage, 6-cell pack5.99 volts

COMMENTS: It's a well-designed, well-constructed reversing ESC with effective thermal cut-off and a massive built-in heat sink. Acceleration is brisk, top speeds are exciting, and run times are good. Check it out!

*Resistance = Voltage drop ÷ Current

original connectors.

The bottom line is that the Contender is a well-designed, well-constructed reversing ESC—well worthy of your consideration.

*Addresses are listed alphabetically in the Index of Manufacturers on page 200. ■

WHAT'S SPECIAL?

Inside the Contender's "snap-together" case, I found first-class workmanship and a couple of unique features.

- The 12 FETs have insulated heat tabs. This electrically isolates the FETs—vital in a reversing ESC. To keep the FETs cool, there are three copper wedges between the six rows of FETs, and when the heat-sink/case is pressed into place, these wedges provide a good thermal path between the FETs and the heat sink.

- There's an auxiliary printed circuit board. It's small and mounted on riser pins, which provide a solid base for it. This auxiliary board relieves component crowding on the main board.

CONTENDER CONCLUSIONS

If you want to replace a mechanical speed control, or you're thinking about buying an Airtronics pistol-grip radio, it might be time to add the Contender to your stable. If you want to use it with a receiver that's not from Airtronics, you'll have to convert the receiver plug, and the safest way to do this is to buy an adapter cable. Other options are to splice on a new connector

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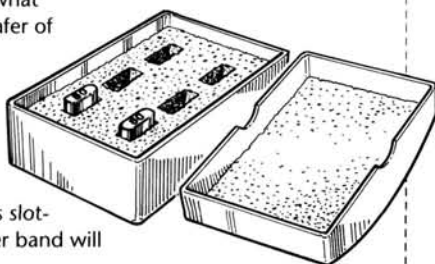
PIT TIPS

by Jim Newman

PADDED CRYSTAL CADDY

Because crystals consist of what amounts to a micro-thin wafer of glass inside a metal casing, they should be protected from impact and not left to rattle around in your toolbox. Hold them safely in a lined soap container with soft foam rubber that's slotted for the crystals. A rubber band will hold the lid on.

Bill DuBois, Layton, VA



PIN-SPIKE PROTECTORS

If you're forced to test-run on blacktop, protect those expensive pin-spike tires with caps cut out of an old 4x18-inch motorcycle tube. A 4-inch-wide (100mm) section will stretch over—and cover—most off-road treads.

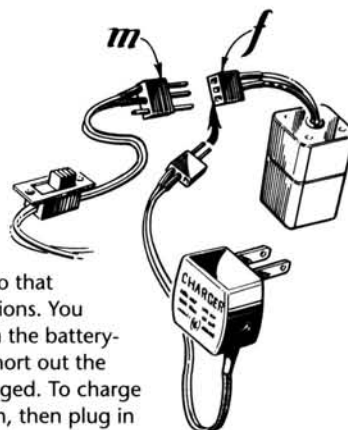
Rick Eyrich, Winter Park, FL

NITRO HAWK RECEIVER NI-CDs

Replace your AA alkaline batteries with rechargeable Ni-Cds. Cut the wires between the switch and the battery box and solder in a Dean's plug and socket.

Arrange the wires as shown so that you don't cross your connections. You must have the female pins on the battery-box leads so that you can't short out the pins when the pack is unplugged. To charge the Ni-Cds: unplug the switch, then plug in a regular 4.8V, 50mAh R/C charger.

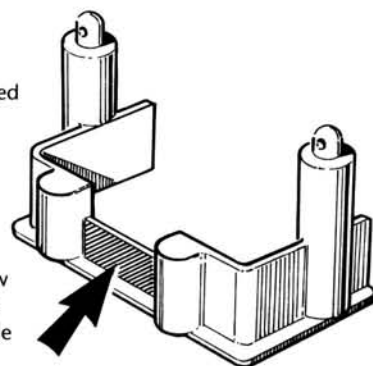
Ross Masunaga, Denver, CO



EASY LOSI PACK REMOVAL

If your pack is firmly wedged in by packed dirt, and there's nothing to grasp except the battery leads, file away the area that's shown shaded from the front of the Losi battery holder; file enough to allow you to get your fingernails or a wedge-shaped popsicle stick (not a screwdriver!) under the end of the pack.

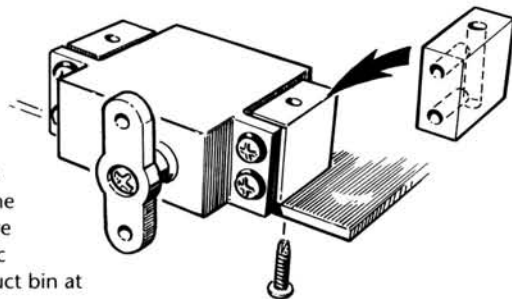
Nathan Heick, Riverside, CA



RIGID SERVO MOUNT

Instead of using servo tape, cut and file plastic blocks (nice and square!) and drill them to fit thread-cutting or sheet-metal screws. Removing screws is much easier than peeling off servo tape, and the screws hold the servo firmly in place for more precise steering. For a plastic block, investigate the Plastruct bin at your hobby store.

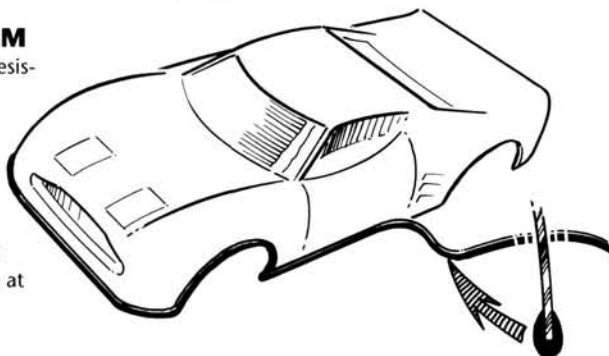
Matthew Hildreth, Grayslake, IL



BODY EDGE TRIM

To improve damage resistance and add a finishing touch, use CA to glue rubber edge trim to your car's Lexan body. Use U-Trim part no. FOR 147 by Fourmost Products; it's available at hobby stores.

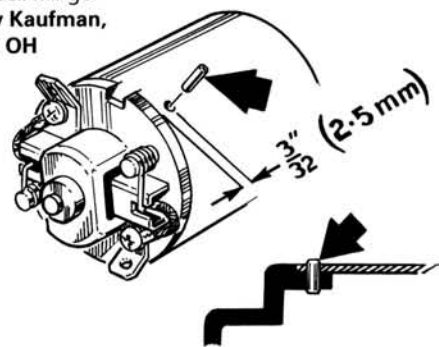
Ken Garnhart, Loves Park, IL



POSITIVE ENDBELL FIX

A "blown" endbell—one that is forced out of the motor can—is not unknown to stock motor enthusiasts. To fix it, drill two 1/16-inch (1.5mm) holes on opposite sides of the can, as shown, then drive in a 0.068x.250-inch-diameter (approximately 2x6mm) roll pin. To remove the endbell, use a small punch to drive down the roll pin, then extract the armature and continue to drive the pin right through the endbell flange.

Gregory Kaufman, Mentor, OH





Light Up the Night

TRUCKS ARE FUN. Trucks are neat. Trucks can go where no man has gone before. Unless you're well-prepared, however, your fun ends when the sun goes down. Did you ever wonder what it would be like to add a lighting system to your otherwise-realistic Clod Buster, Blackfoot, Bull Head, Pajero, or Big Brute? I did, and I've discovered that it isn't as difficult as it sounds!

Most ABS-body trucks and some Lexan bodies will accept lighting systems fairly easily, even if the original manufacturer doesn't offer a lighting kit. If your car or truck is made by Tamiya* or Kyosho*, and it has a hard-plastic, chrome-plated grill that incorporates a headlight area, you have a prime candidate for a lighting transplant.

Trucks with all-Lexan bodies are a different matter altogether. Owners of these vehicles should take a close look at the systems offered by RAM*. With a little planning, their stand-alone fog lights and roll-

bar lights can be adapted to many truck models. Kyosho also makes an acceptable headlight/fog-light system for this purpose.

In addition to headlights, some trucks—especially those with mechanical speed controls—can accept brake lights and reversing lights. All it takes is a little thought and ingenuity.

The key to the success of any lighting system, however, is how much light it can put out. I've seen systems running off 7.2V battery packs that put out some pretty puny candlepower. That's because they used 12V DC light bulbs. The advent of small, powerful, 2-cell flashlights, however, means that the technology to build a light, powerful system that runs on low voltage is as close as the nearest shopping center. I've used Radio Shack replacement parts for this setup, but you could probably find the right stuff at almost any good electronics supply house.



Parts List

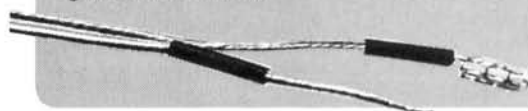
Radio Shack

- no. 272-1149 replacement mini-lamps
- no. 272-626A DPDT toggle switch
- 4-cell receiver battery case from Radio Shack (or from any popular radio system)
- paired, 20-gauge, stranded wire
- 20-gauge shrink-wrap
- Silicone RTV sealant or Shoe-Goo

Cost: about \$13.50 for four lights; \$27 for a complete set, front and rear.

1

Start by adding a pair of 12- to 18-inch leads to each mini light bulb. Rosin flux will make it easier to tin the wires before you solder them together. Make sure that you shrink-wrap the connection to guard against short circuits!



Now apply some RTV or Shoe-Goo* around the base of the mini lamp (don't get any on the upper part of the bulb), and press it into the headlamp socket that's already molded into the grill. Take your time, and make sure that the lamp is centered properly in the hole. Let it sit overnight to dry. Don't glue the headlamp lens into the grill until the RTV has set, or the fumes will fog the lens!

2



3

Convert the 4-cell battery case into a pair of 2-cell packs by clipping this connecting spring wire and bending it as shown. Apply some Shoe-Goo or RTV to the base of the spring terminal to hold it in place. I install a battery in the case overnight until the RTV has cured.



TEAM LOSI TECH TALK

THE TRICK TEAM SET-UP

Now that many of you have the new Double-XT, I'm sure you are wondering if the team drivers are setting their trucks up differently. Well, here is a good Setup for you to try. In the front end, leave the camber link mounted in the stock location. Add two of the ball stud washers (gold) under the ball stud on the outside. The front shock should also be left in the stock location. For pistons up front, you can either use the stock #56 piston, or drill one of the holes in the #56 piston out to #55 while leaving the other two holes alone. This creates a piston that we refer to as 5,6,6, which will create a setup slightly better than using a standard #56 piston. 36wt oil should be used in the front shock regardless of which two pistons you use. The 2.0 rate (yellow) spring should be used on the front shocks. The front ride height should be set to just *slightly* lower than arm level.

For the rear end, the camber link is moved to the #5 location on the bulkhead and the #3 location on the rear hub. This location will require a turnbuckle longer than the standard one. Now would be a good time to get yourself some Titanium turnbuckles. The 2 3/8" length offered by Lunsford Racing works well here. If you would rather use the standard turnbuckle, use the 36 location on the rear bulkhead. This isn't quite as good as the #5 location, but it's a close second. The rear shock should be left in the stock location. Either a standard #56 piston or a 5,6,6 piston can be used, but, again, the 5,6,6 piston is slightly better. 30wt oil should be used in the rear shock. The rear ride height should be set a little below level. Use the white plastic ride height gauge supplied with your kit. Most of the team is currently using the #4 rear pivot support and the standard rear hubs.

The tires you use will really depend on the track you will race on. Give this setup a try. I think you will find it will work well. Good luck with your new Double-XT Racing Truck!

Let us know what's going on! Address your questions and problems to Team Losi, "Tech Talk," 13848 Magnolia Ave., Dept. J, Chino, CA 91710.

Attach a second set of wire leads to the spring terminals. Doing this will allow you to run two pairs of lights off one lightweight, compact, battery pack.

4



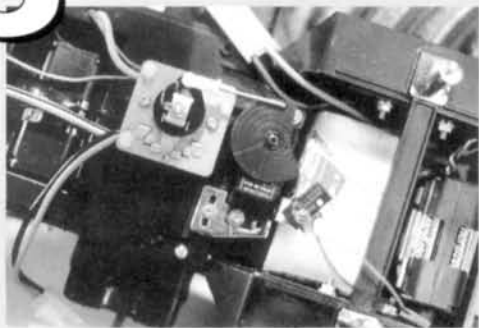
Route one of each pair of leads through the DPDT (double-pole, double-throw) toggle switch. One throw of the switch will then activate both pairs of lights. Attach a Deans* plug to both pairs of leads in the circuit (past the switch, so that you'll be able to remove the body easily). Drill a hole of the proper size, and mount the switch on the chassis where you can access it.

5



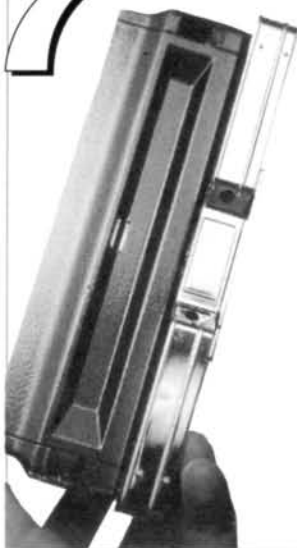
If you use a mechanical speed control, you can very easily add brake lights and reversing lights to the rear. (ESCs require a little more planning and wire grafting, but it can be done.) Use the large, circular servo arm that comes with Futaba systems, and a leaf or reed switch for each function from Radio Shack. First, drill a hole in the wheel the proper distance from the center to accept the arm for the speed control. Make a mounting bracket for the reed switch out of aluminum or Kydex, and attach it directly to the servo with double-sided tape.

6



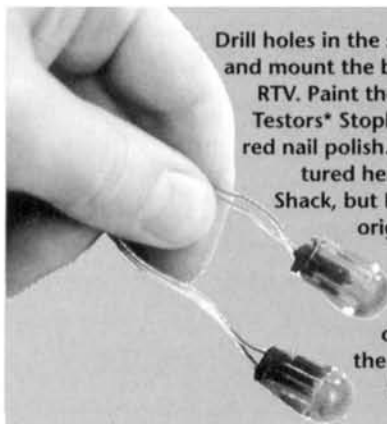
Backup lights can be mounted with RTV in holes drilled in the rear bumper area.

7



Drill holes in the stoplight molds, and mount the brake lights with RTV. Paint the bulbs red with Testors* Stoplight Red, or use red nail polish. The red lenses pictured here came from Radio Shack, but I had to remove the original 12V bulbs and replace them with mini-lamps. They fit into holes that I drilled in the rear of the Clod Buster, where the brake lights are molded in.

8



There you have it! A lighting system increases the fun quotient and scale realism of your truck, and it lets you use it well into the night!

*Addresses are listed alphabetically in the Index of Manufacturers on page 200. ■



Engines and Fuel— What You Know and What You Don't

Since the first $\frac{1}{10}$ -scale gas racing trucks were introduced by Kyosho a few years ago, all trucks in the USA have relied on .12-size engines. Now, .12 engines are great, and they produce enough power to pull wheelies if the traction is there, but some lack longevity, and they could be more powerful.

All .12 engines, such as those from O.S., Dynamite and Yokomo, are side exhaust with barrel carburetors. This design is based on model airplane engine design from way back. Europeans have been racing .15-size, rear-exhaust engines for years; these engines have now become very advanced and powerful. Why don't the European companies

subtraction tells us that there's a difference of .03 cubic inch, the numbers aren't really right. According to the O.S. spec sheet, a .12 CZ-R or CZ-Z engine is actually a .12875 engine. It doesn't take a rocket scientist to realize that this is closer to a .13 than a .12. So, rather than having 25 percent more displacement (and, therefore, horsepower) than a .12 (.03 is 25 percent of a .12), a .15 engine actually has about 15 percent more displacement (.02 is 15.5 percent of a .12).

Another interesting note: just as a CZ-R has a displacement of .12875, the CZ-M marine engine has a displacement of .15193: yes, it's a 15! And I'd bet that because the crankcase is identical, the

decide which is right for them. ROAR also has a strict set of rules: "An engine manufacturer who makes both a .12- and .15-size engine for use in R/C cars must design both of the engines so that crankshafts, or pistons and sleeves, cannot be easily interchanged between their .12- and .15-size engines so as to increase an engine's size over its official stated size. Any engines manufactured so that the above infraction is possible will result in that manufacturer's engines being disqualified in R/C car competition." No list of legal engines has been finalized at this time.

What impact would .15s have on the racing classes? Well, making .15 engines legal for all $\frac{1}{10}$ -scale truck racing would make it possible for engine manufacturers like OPS, Nova Rossi, Mega, Cippola and Picco to get into the show. Racers would then benefit from the years of development these engines have seen—and from their greater power!

Let's let the people decide what they want. Run a class with .12s and make a different class for .15s. If there's a significant difference in the lap times, keep the classes separate and let racers decide which one they want to compete in. Maybe there should be a class in which the pros use .15 engines? In Europe, they run .12 and .15 engines together in qualifying, and if there are enough to run sepa-

rate .12 and .15 Mains, they split them up. If there aren't, they let them run together. Let me—and your track—know what you want.

FUEL CONCERNS

There are several different schools of thought about car fuels. Ask 20 guys what the best mixture of fuel is, and you'll get 20 different answers. Not many manufacturers will tell you the percentage of oil in their fuel, or even whether it's castor or synthetic, but most car fuels are around 12 percent oil. According to O.S.*, all fuels should contain at least 18 percent lubricant, and castor oil is recommended because it's more tolerant of a "lean-run" than synthetic oil.

For most engines, 12 percent is just fine; it will provide a good balance of power and protection. For some engines though, this isn't enough. O.S. recommends 18 percent because its sleeves are not chrome-plated; they're nickel-plated. Nickel wears out much faster than chrome. Many people have told me that their CZ-R has worn out after only a gallon of fuel. I've had the same problem. To increase the life of these engines, it's a good idea to add a little oil.

Now, if you want to add more oil to your fuel, use Sig's* high-quality triple-A castor oil. It's available at hobby shops, and you might even find castor oil at a pharmacy. Add 2 ounces to a gallon; you can add castor even if the oil in your fuel is synthetic.

Remember that some racers use fuels containing less oil in an effort to



On the left is an O.S. CZ-R as seen from above. On the right is a .15 engine—not too much difference in diameter, huh?



make a .12 engine that incorporates the advances developed in .15s? Most engine manufacturers probably just don't want to bother to make an engine so close in size to one they're already producing.

The difference between a .12 and a .15 engine is probably less than you'd think. Although simple

.15 piston and sleeve would fit right into a .12-size crankcase. I'd hate to think someone would run a .15 piston and sleeve in a .12, but it could happen.

ROAR is headed in the right direction with its new rules for gas cars. First of all, there's a class for .12 engines as well as one for .15 engines, so racers can

gain power. If you're competing seriously, you may want to get that little bit of power but, if you just want to have fun, you're better off putting more oil in your fuel so that your engine will last longer.

DIESEL DIFFERENCE

You may have noticed that there's now a diesel conversion for .12 engines. Davis Diesel Development* has released a head system that replaces the standard



Here's Davis Diesel's new head on a Dynamite engine. With a diesel conversion, there are no plugs, and run times are much longer.

glow-plug head with a new design. The bottom line? There are no plugs to worry about, the engine runs cooler, the fuel is better for the engine...and how does 22 minutes on a 75cc tank sound? And—oh, yeah: it produces more power! All this sounds great, but it opens a whole new can of worms as far as rules are concerned. It would be unfair to run a diesel against a glow because of the run times alone. If diesel catches on, we'll need a separate class for them to run in.

**Addresses are listed alphabetically in the Index of Manufacturers on page 200.*

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Racing Products U.S.A.

(1)
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(2)
• Are you fed up with slow lap times?

(3)
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So the next time you're looking to hop up that ride and cut some major time off those laps, go with **CRICKET RACING PRODUCTS U.S.A.**—designed by racers for racers.

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For a free sticker and a complete catalog,
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GETTING STARTED

Last month, we answered the first five of Brian Leslie's "Top Ten Beginners' Questions." This month, we bring you the next five. Read on!

When I buy a car, what will I need to run it?

A radio transmitter and receiver, a speed control (some cars come with a mechanical type), a motor (again, some cars come with one), a battery pack and battery charger for the car, and batteries for the transmitter (usually eight AAs). Other items you should buy are motor cleaner, bushing or bearing oil, and a commutator stick to clean the motor's commutator.

How much maintenance do R/C cars require?

This is difficult to say. Where you drive your car and how much you drive it will determine how often you need to service it. Because of the dirt, off-road cars require more maintenance than on-road cars. I usually drive my RC10 Team car one to

two times a week. I run about eight to 10 battery packs. After each battery pack, I clean the motor with motor spray and inspect the brushes for excessive wear, and I oil the motor bushings or bearings. Each week, I remove all the wheel bearings and thoroughly clean them with either bearing cleaner or motor cleaner. I then soak them in automobile oil before placing them back into the car. I spin the rear wheels to inspect the diff, and if it doesn't feel gritty, I leave it alone. I also wipe down and brush off the rest of the car while I inspect it for lost or broken parts. Even though my car doesn't always need this much maintenance, I do it anyway. It's a good habit to get into, and a great way to stop problems before they start. Once a month, I tear down the transmission, inspect and replace any worn parts and rebuild the tranny according to my instruction manual. Total maintenance time per week is 1 to 2 hours.

What are differential (diff) balls, and how do they work in my off-road car?

First, I should explain that a diff allows the rear wheels to turn independently. It makes cornering much easier. For example, when your car takes a left-hand turn, the inside rear tire will not have to travel the same distance as the outside rear tire. Depending on how sharp the radius of the turn is, the inside tire might only rotate three times, as opposed to the right-side tire, which might have to rotate six times in the same distance. If both rear tires

Dictionary



ball bearings

backplate—a cover that seals the lower end of an engine. Used only when a pull starter isn't used.

ball bearings—a small metal unit that's designed to replace solid metal or plastic bushings found in many kits. They allow rotating parts to spin more freely.

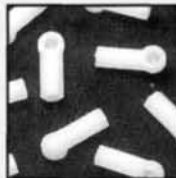
ball driver—a type of hex or Allen wrench with a special tip that allows the tool to be inserted at an angle.

ball ends—plastic parts that, when threaded onto turnbuckles, allow the turnbuckles to be connected to ball joints.

ball joints—a small metal ball with a threaded shaft on one side. They're threaded into steering suspension parts, and then a ball end can be snapped on.

BEC—battery eliminator circuitry allows one battery to power the radio and motor in a car. It saves weight by eliminating the need for a separate receiver pack.

bellcrank—a steering-assembly system found on most off-road cars; it's connected directly to the steering servo and the steering rods. It pivots on either a bushing or bearing assembly.



ball ends



ball joints



bellcrank steering kit

were trying to spin at the same rate, the car would want to go straight and not turn. The differential balls ride inside the diff gear between the diff rings. On each side of the diff gear are the outdrive hubs. On off-road cars, the outdrive hubs support the dogbone axles. The diff balls allow the outdrive hubs to move independently, thereby allowing one wheel to spin at a different rate of speed from the other.

Can I use my R/C car in the rain, snow, or heat?

An R/C car can be used in any weather, but be careful not to get the electrics wet. Wrap them in balloons or plastic to keep them dry. Remember, though, that the ESC needs cooling, so the heat sinks have to be exposed to the air. Running your car under water is

definitely not recommended!

What are camber, caster, toe-in and toe-out?

Caster is the angle at which the up-and-down center line of the wheel spindles are tilted. If they're tilted back, as they are on the front end of off-road cars, this would be positive caster (or kick-up). Camber is the angle to which the top of the tire leans; inward (toward the chassis) is negative camber and outward (away from the chassis) is positive camber. Toe is the angle at which the tires are turned; inward (toe-in) toward the chassis of the car or outward (toe-out) away from the car.

—Brian Leslie

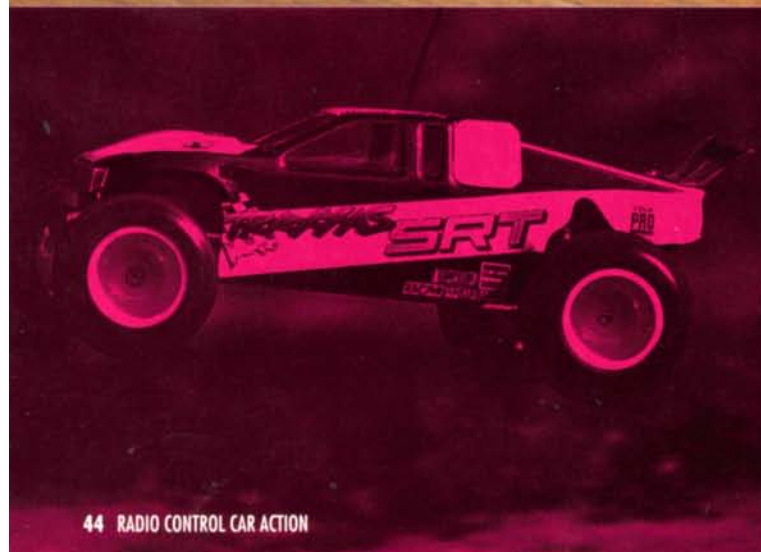
Q I'm 12 years old, and I've recently become interested in off-road, 2WD, electric trucks. I'm thinking about getting Associated's RC10T, but that might be too much money. Is there an alternative for a beginner like me? Also, I want big fat tires so I can drive through the grass, but I don't want a monster truck. Please help!

Nick Grant, Merrit Island, FL

A Nick, the RC-10T is a great truck for racing and for fun. If the price of the Team version is too high, look at the Sport version. You can find it for just over \$100. There are also several other trucks that you should check out: the Traxxas Rustler, the Losi JR-T, the Kyosho Outlaw Rampage, and the MRC MT-10S. They're all excellent entry-level trucks that will haul through grass!

J. Huber

Rebirth of the Eagle



TRAXXAS SRT

by GEORGE GONZALEZ

THE SRT REPRESENTS Traxxas's* finest effort in the highly competitive, 1/10-scale, electric-racing truck arena. The SRT is loaded with all the latest racing features, and it has a unique feature that no other company can match—a no-breakage guarantee. The folks at Traxxas believe that their new, super-rigid, performance-tested suspension components are so superior that they can back them up with this guarantee. That's right—you break it; they fix it.

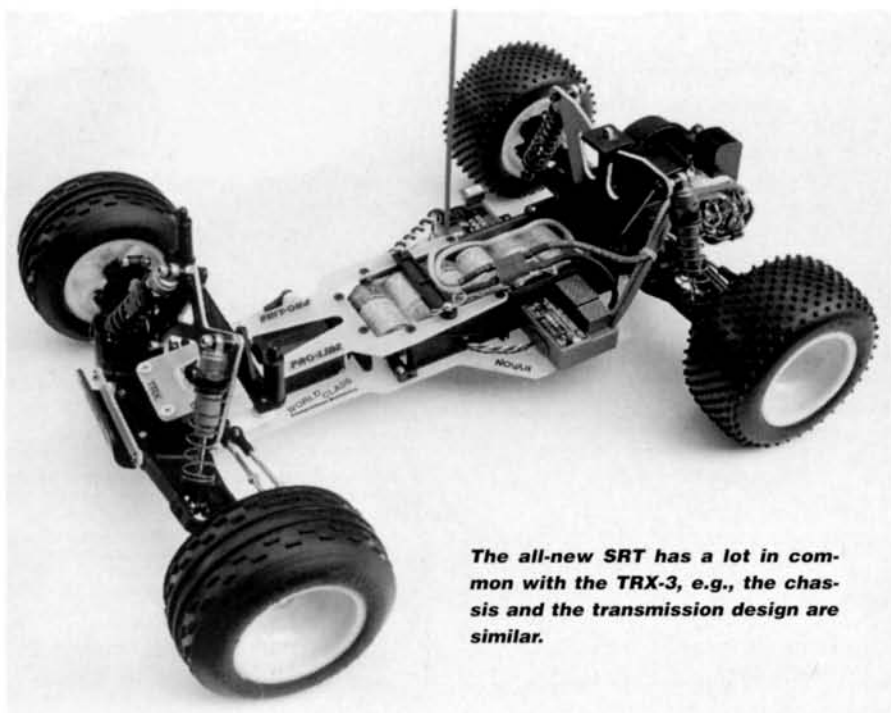
KIT FEATURES

The SRT is a completely new truck, and it shares very few parts with its predecessor—the LS-II. The SRT does, however, borrow many of its hot new features from its buggy brother—the TRX-3.

For starters, the SRT includes an all-new, extremely lightweight, dual-plane, fiberglass chassis, which is similar in design to the TRX-3's chassis, only longer. The bridged Zero Flex chassis is very rigid, and it will not flex, bend, or break. The chassis is also wider toward the back, so the receiver and the ESC can be mounted flat on the chassis where they belong.

PHOTOS BY JOHN HOWELL





The all-new SRT has a lot in common with the TRX-3, e.g., the chassis and the transmission design are similar.

The SRT's A-arms, caster blocks, steering blocks, A-arm mounts, stub axle housings and front bulkhead are molded out of a new, black composite material that's extremely rigid and tough (they would have to be to carry a no-breakage guarantee). The rest of the molded parts are dyed black to match, and they look pretty cool mounted on the fiberglass chassis.

An all-new, one-piece, front bulkhead is secured to both the upper and lower chassis plates, and provides 25 degrees of front kick-up. I wondered why the SRT was set up with a 25-degree kick-up instead of a 30-degree kick-up, like all the other racing trucks on the market. A quick call to Traxxas chief engineer Mike Hamilton answered my

question: reducing the caster to 25 degrees improves the truck's low-speed steering and makes the truck more stable when exiting the turns. My LS-II had a tendency to oversteer at low speeds and understeer when coming out of the turns, so this made a great deal of sense to me.

New extra-long A-arms are attached to the front bulkhead with hinge pins and secured at the ends with a unique, fiberglass tie bar. The fiberglass tie bar, which is secured to the hinge pins with E-clips, is designed to keep the suspension tight.

A set of new, black, fiberglass shock towers is included with the SRT. The cross-braced design makes the shock towers extremely lightweight and rigid. They come

• The new Zero-Flex chassis is a major improvement. It's lighter, it has a longer wheelbase, and it's wide enough to mount the receiver and ESC flat on the chassis for better weight distribution.

• The new diff is lighter and smoother than the previous diff.

• Pro-Line tires are included in the kit—a nice touch.

• To say that the SRT's handling is much better than its predecessor's—the LS-II—would be a major understatement.

LIKES



DISLIKES



• If I said none, would you think that I'm biased?

THINGS YOU'LL NEED

Here's the list of things you'll need to get the SRT up to speed.

- A 2-channel radio system
- A steering servo (high speed/high torque preferred)
 - ESC
 - Motor
- Battery pack (6 or 7 cells)
- Battery charger

TRAXXAS SRT

Scale 1/10
Price \$335

DIMENSIONS

Overall length 17 5/8 in.
Width 12 3/8 in.
Wheelbase 11 3/8 in.
Front track 10 1/4 in.
Rear track 10 1/4 in.

WEIGHT

Gross (w/battery) 3 lb., 12 oz.

CHASSIS

Type Double-deck plate
Material Fiberglass

BODY

Type Stadium truck
Material Polycarbonate

DRIVE TRAIN

Primary Pinion/spur
Transmission 3-gear
(output ratio 2.72:1)
Differential Ball diff
Bearings/bushings 16 ball bearings

SUSPENSION

Type (f/r) Lower A-arm, upper camber link
Damping (f/r) Oil-filled, coil-over shocks

WHEELS

Type (f/r) One-piece dish
Dimensions (dxw) 2.2x2 in.

TIRES

Front Pro-Line Pro 65 (Red compound)
Rear Pro-Line Stubbie T (XTR compound)

ELECTRICS

Motor, battery, speed controller Not included

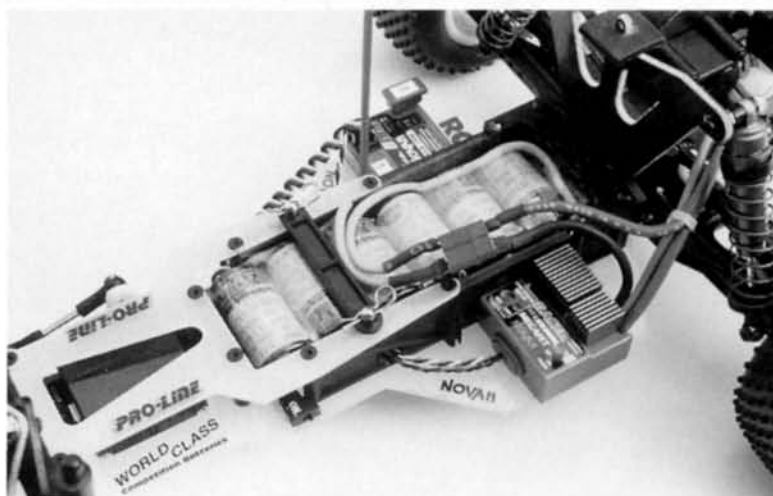
Test gear

An Airtronics® Caliber 3P was used to send my commands. A Novak NER 3FM receiver, which is mounted flat on the right side of the chassis, picks up the signals. To manage the power, a Novak Racer ESC is mounted on the left side of the chassis. The lightning-fast steering is provided by a Futaba FP-S131SH high-speed servo. The ponies for my test truck are provided by a World Class 7-cell, 1700 SCRC matched pack and a Trinity/Kinwald Series, 12-turn-double modified motor that's cooled by a Holeshot® 2001 motor heat sink.

Building and setup tips

The SRT is a highly tunable, pro-level racing truck that requires some degree of R/C knowledge to assemble. Some beginners might need to call on a more experienced hobbyist for help on a few steps (especially in the diff department). On the other hand, the SRT's instruction manual is extremely comprehensive and easy to follow, so the more experienced builder should glide through the assembly process without a glitch. I had my SRT completed in less than 5 hours, and I didn't run into any bottlenecks along the way. Here are a few basic tips I thought I'd pass along:

- Because of last-minute production changes, the kit comes with a full-page instruction addendum and several parts that are not called for in the instructions but are necessary to complete the kit. It's important to keep the addendum sheet handy and to refer to it with every step.
- Some hand-finishing is required to remove some mold flashing. Use a hobby knife and a fingernail file to remove the flashing on all the tree-mounted parts. Use a fingernail file to carefully remove the flashing from the shock pistons (this is an integral part of the shocks).
- The SRT's battery cradle will accommodate all 6-cell packs and most 7-cell hump packs without any modification. In order to install 7-cells flat on the chassis, however, a section of the upper chassis will have to be removed to allow the 7-cell flat pack to drop in (a Dremel tool works great for this). An extra set of mounting holes on the chassis is provided to allow the battery stop to be mounted farther forward to accommodate a 7-cell flat pack.
- As far as setup tips go, every setup trick you have learned for your track will work equally well on the SRT. The truck's front and rear toe-in/toe-out, caster and camber and shocks are completely adjustable. I built my truck according to the instructions, and I've yet to deviate from them.



The batteries rest securely in the center battery box, which accommodates 6 or 7 cells. The electronics fit nicely on the extended sides of the lower chassis plate.

with different camber and shock-mounting holes, so the truck can be quickly set up for off-road or oval racing.

The SRT includes a set of Big Bore shocks with hard-anodized, Teflon-coated bodies. The new shock bodies have a larger diameter than the previous shocks and a higher capacity. The bodies hold more shock oil, which increases stability on bumpy tracks. The new shocks feature double O-rings and Teflon seals for leak-free operation, and the shock caps have rubber diaphragms to prevent the formation of air bubbles.

A set of 2-inch blue springs, with a spring rate of 3.2, is included for the long front shocks, and a set of 2.75-inch green springs, with a spring rate of 2.5, is included for the extra-long rear shocks. The shocks also come with quick-release, spring-adjustment spacers that make accurate spring-

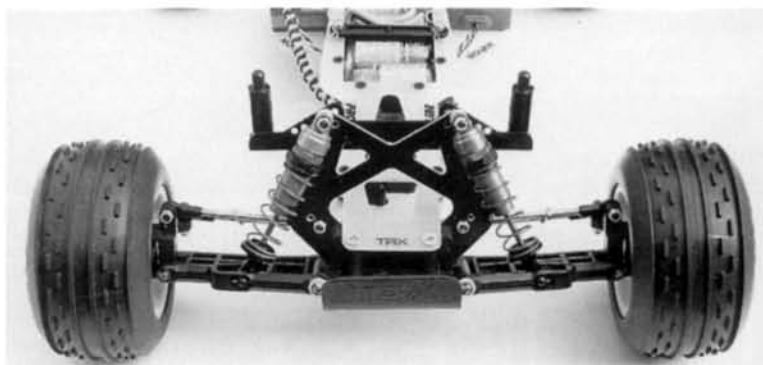
rate adjustment a snap. The kit includes many extra spacers of varying widths.

The ultra-smooth Magnum 272 tranny makes its debut in the SRT. The major difference between the



The Magnum 272 is an all-new transmission that's similar to what is found in the TRX-3, but it features a new ball-diff.

new Magnum 272 and the previous tranny is the ball diff. The new diff is virtually the same one that's found in the race-proven TRX-3 buggy, only a 60-tooth diff gear is used in the Magnum 272. The new diff is smaller and lighter than the previous diff, and it includes 12, super-hard, $\frac{3}{32}$ -inch, carbide balls instead of the hardened-



Extra-long, rigid suspension arms with Big Bore shocks round out the front suspension.

Factory options

Traxxas offers a full line of hop-ups for the SRT that are designed to enhance its already superb performance. The following parts list can be found in the spare parts list that comes with the kit, and it includes the pricing information. Any of these parts can be ordered directly from Traxxas, and they'll be shipped via UPS to your home.

- Graphite lower chassis plate—part no. 2522X
- Black fiberglass upper chassis plate—part no. 2521X
- Graphite suspension tie bar—part no. 2532X
- Graphite front shock tower—part no. 2518X
- Graphite rear shock tower—part no. 2517X
- 5x8mm bellcrank bearings (x4)—part no. 2728
- Caster blocks (30-degree) (L&R)—part no. 2632R
- Front bulkhead (30-degree)—part no. 2530
- Hardened steel-drive yokes w/U-joints (x2)—part no. 4628X
- Slipper adapter shaft (allows use with Hydra Drive)—part no. 1993X
- Machined Delrin top gear—part no. 3195X
- Machined aluminum idler gear—part no. 1996X
- Machined Delrin diff gear—part no. 2519X
- Planetary gear diff (great for oval racing)—part no. 2388

You'll be pleased to know that the SRT is capable of getting you to the A-Main without any of these hop-ups, however, it's nice to know that they're available for that competitive edge.

PERFORMANCE

I decided that the perfect location to test my brand-new SRT was at Ranch Pit Shop. This facility had just hosted the NORRCA Gas & Electric Truck World Cup, and the brutal track layout for that event was still in place. I immediately noticed that the SRT was quicker and much more stable than my LS-II. This is due to the SRT's lightweight design and longer wheelbase. I was amazed at how the SRT went into and out of the corners without any fuss whatsoever, and it held a tight line without wandering. I attribute this to the truck's new ball diff and perfect suspension geometry. The SRT glided past obstacles without losing its composure, and it made the largest jumps seem insignificant. The Big Bore shocks and ultra-rigid suspension components take the credit for this.

FINAL THOUGHTS

I was thoroughly impressed with the SRT's performance on the track, and I can honestly say that it's the fastest, best-handling truck to ever leave the Traxxas assembly line. The World Class* cells, Novak* ESC, Trinity* motor and Futaba* high-speed servo all worked flawlessly, and they all contributed to the truck's excellent performance. If you're in the market for a pro-level racing truck, I would strongly recommend that you give the SRT a hard look.

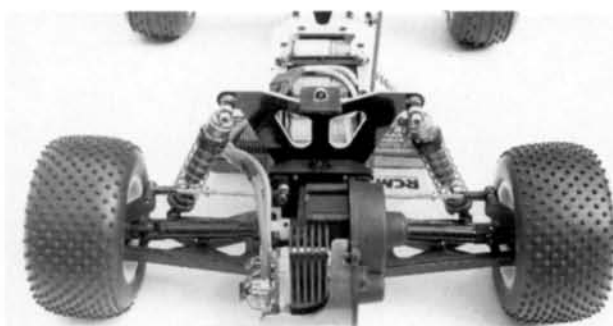
*Addresses are listed alphabetically in the Index of Manufacturers on page 200. ■



Cool! For all you racing freaks, Traxxas has included a set of Pro-Line Pro-65 Red compound ribbed tires to help steer the beast, while a set of Stubbie Ts in XTR compound grab and kick up some dirt.

steel balls included in previous kits. The new diff is supported on both sides with ball bearings for super-smooth operation, and it can be adjusted externally without any disassembly.

A complete set of Pro-Line* tires with foam inserts is included in the kit. A set of Pro-65s in the Red compound is provided for the front wheels, and a set of Stubbie Ts in the new XTR compound is for the rear wheels. This combination will provide tons of traction on medium to low-bite tracks. The same narrow, low-slung stadium truck body that was used on the LS-II is also used on the SRT.



In the rear, extra-long suspension arms with Big Bore shocks soak up the bumps. A Trinity 12-turn double, Kinwald-modified motor provides the heavy horsepower.

AERO-CAR TECHNOLOGY



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TAMIYA

Globe Liner

by Paul Onorato

NEVER BEFORE HAVE I seen an R/C vehicle with such scale realism. Both the Tamiya* Globe Liner and its Tanker Trailer have incredibly realistic detailing and more features than you can imagine. The combination is a scale model of a cab-over that looks tame enough to be displayed on a museum shelf, but has the capacity to tear up the interstate.



KIT FEATURES

The kit comes with almost everything you need to get rolling and includes well-marked parts and easy-to-follow instructions that make assembly faster and easier. The Globe Liner, a super-realistic 1/4-scale flat-nose cab-over semi-truck with sleeper, has a chassis similar to Tamiya's other tractor trailer truck—King Hauler—but it's shortened so that it can be mounted to the Globe Liner's cab-over body. Its metal, channel-type frame has aluminum-channel side members and engineering-plastic cross-members for lightness and durability.

With its remote-release trailer hitch, the Globe Liner can be hooked up to both box-type and tanker-type Tamiya trailers. Other authentic details include, metal-plated bumpers, fuel tanks and side steps, as well as rubber-like mud flaps.

The Globe Liner's highly detailed, injection-molded body is loaded with metal-plated parts: front grill, air cleaners, windshield visors, air horns, dual exhaust pipes, side mirror supports and grab rails.

The liner's interior is fully detailed with high-back bucket seats, dashboard instruments and a steering wheel. It rides on 10 synthetic-rubber tires that have a realistic tread pattern. The chrome-plated one-piece wheels

are mounted with dual tires in the rear and single tires in front.

The Globe Liner has a working, scale-accurate leaf-spring suspension with coil-spring shocks in the front and the rear, a die-cast

metal cross-beam front axle and solid double rear axles with bevel gear differentials. Powered by an RS 540-type stock motor, the easy-to-assemble, 3-speed transmission has a sealed gearbox with constant-mesh gears (for

Scale 1/4
Type Flat-nose cab-over-type
semi-truck with sleeper
List price \$600

DIMENSIONS

Overall length 19.7 in.
Width 7.2 in.
Wheelbase 14.1 in.
Front track 6.1 in.
Rear track 5.4 in.

WEIGHT

Gross/w/ battery and electrical
unit 7 lb., 12 oz.

CHASSIS

Type Ladder
Material Aluminum and plastic

DRIVE TRAIN

Primary Gear
Transmission 3-speed
Differential(s) Bevel gear
Bearings/Bushings Bushings

SUSPENSION (F/R)

Type Leaf springs with
coil-spring shocks
Damping None

WHEELS (F/R)

Type Chrome-plated plastic
Dimensions (DxW) 1.8x0.75 in.

TIRES

F/R Tractor truck tread

ELECTRICS

Motor 540 Mabuchi
Battery req'd 6-cell
Speed control Novak 610HRV

TRAILER DIMENSIONS

Length 32 in.
Width 7 in.
Height 10.5 in.
Weight 10 lb., 2.5 oz.
Wheelbase (cab front to trailer rear) 41 in.
Material Stainless-steel tank, aluminum
and plastic

SUSPENSION (F/R)

Type Leaf springs with coil-spring shocks
Damping None

WHEELS (F/R)

Type Chrome-plated plastic
Dimensions (DxW) 1.8x0.75 in.

TIRES

F/R Tractor truck tread

SPECIFICATIONS

Building and Setup Tips

GLOBE LINER

- As with any model kit, you must read the instruction manual carefully.
- Remember to remove the protective film from the black-anodized aluminum!
- To ensure the proper fit, match each part to its full-scale schematic at the left margin of the manual.
- An area that might cause some difficulty is the constant-mesh 3-gear transmission, so pay extra attention to the drawings. It's the most crucial part of the entire truck; a missing E-ring could spell disaster.
- Throughout the manual, there are small pictures to indicate the use of grease, liquid thread-lock, or instant cement. Each is depicted by a different figure, so make sure you don't confuse them. In the steps for assembling the gearbox alone, both grease and liquid thread-lock are used.
- Don't forget to solder the capacitors to the motor before you install it on the gearbox.

In case you buy the optional tanker and the optional light set, here are a few tips I'd like to pass along.

TANKER TRAILER

- While you're working on the trailer, leave the protective film on the stainless-steel tank until you are ready to use it. When you handle the tank, use latex or cotton gloves. This will help you avoid having to do extra cleaning when you've finished.

Things You'll Need

- Ni-Cd 7.2V racing pack battery
- Charger
- 2- or 4-channel radio
- Forward/reverse electronic speed control

- The only things that were slightly difficult to put together were the retractable support legs that automatically retract when the cab backs up to them.

LIGHT SET

- Although all the wires and circuit boards seem confusing, Tamiya has done practically all the work for you.

Each of the light bulbs has wire leads with the ends already stripped. After the bulbs have been installed, each of the wire leads gets placed into a light terminal. The terminals have wire harnesses that lead to the main circuit board, and you simply plug them in.

- Before you deal with the mechanism deck for the electrics, assemble the front and rear bumpers. Following the Light Set instructions, put the bulbs into each of the bumpers, attach them to the chassis, then attach the reverse-warning beeper. Doing this step first makes it much easier to feed the wires along the ladder frame and up through the mechanism deck. On the mechanism deck, you need a spot for two light terminals; I installed the front one on top of the receiver and the rear one behind the driver's seat.

Cool Accessories

As it stands right now, there are a lot of really cool, scale-looking accessory items for the Globe Liner.

- Intercontinental Express Trailer—part no. 56302
- Roof Spoiler—56504
- Oil Shocks—56503
- Motorized Support Legs—56505
- Animal Guard—56506
- Rig Light Set—56501
- Trailer Light Set—56502

likes 

- The truck has incredibly realistic looks and features.
- It comes with a 3-speed transmission that you can shift on the fly.
- As a side note, if you opt to go for the accessory stainless-steel tank, it adds a gorgeous touch.
- The light sets are also a great addition to an already awesome kit.

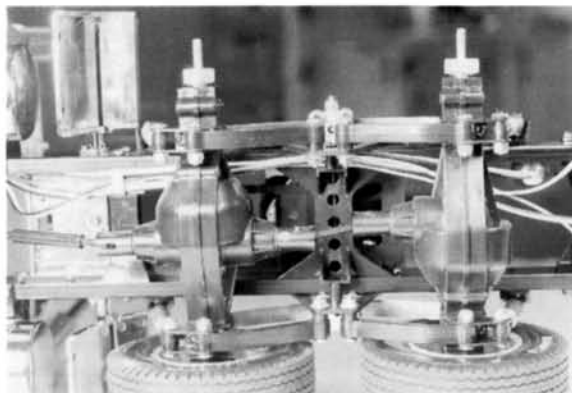
dislikes 

- A little pricey and complex for the novice builder.

that automatically retract when hitched, leaf-spring suspension, scale spring shocks, eight synthetic-rubber tires, rubber-like mud flaps and California and Nevada license plates. Other must-have accessories include the Rig Light Set and the Semi-Trailer Light Set, which contain working roof lights, headlights, turn signals, brake lights, hazard lights and a reverse-warning beeper.

TEST GEAR

A 4-channel radio is recommended to operate the constant-mesh 3-gear transmission. If, however, a 2-channel radio is used, the transmission can easily be set in one of the three gears. An electronic speed control with proportional forward and a flat Ni-Cd 7.2V battery are required; for scale realism, reverse should also be included. I used a Novak 610HRV and a Tamiya 6-cell stick pack.

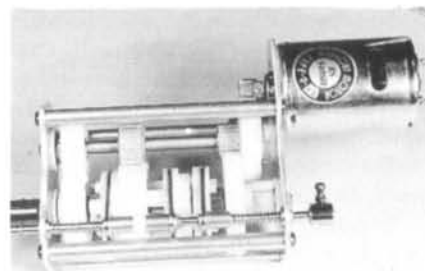


All the rear wheels on the Globe Liner are powered by the motor; the power gets to the ground through two bevel-gear differentials.

smooth shifting on the fly) and mid-mounted, shift-rod operated dog clutches.

Tamiya's Tanker Trailer adds even more realism to the already spectacular liner. This 32-inch-long, oval, stainless-steel tank features: an aluminum upper-deck walkway and aluminum lower mounts; metal-plated hose casings and rear ladder; two, triangular, rubber wheel chocks; and colorful

"Shell" markings. The trailer also has a black aluminum chassis, spring-loaded support legs



A simple 540 stock motor powers the Globe Liner truck. The 3-speed transmission allows you to choose the gearing that best suits your type of driving. With a 3-channel radio system, you can shift on the fly.

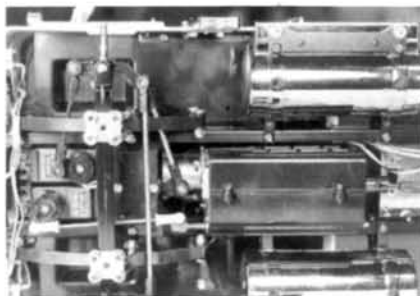


PERFORMANCE

I decided that, for the Globe Liner's first voyage, an absolutely flat surface was necessary. I found a perfect, newly paved parking lot near my house. The anticipation of seeing this R/C giant cruising around the lot was intense, but when the time came to start it up, I had second thoughts: "What if something happens and I wreck it? What if I get a wild *Mad Max* flashback?"

Well, I powered it up and went for it. The Globe Liner moved out in first gear at a decent pace. Dropping it into second and third was amazing because it gained some serious speed. I was a little apprehensive about shifting while on the fly, but I soon found that it changed gears fairly smoothly. To keep the trailer stationary so that I could perform the Tanker Trailer hookup completely by R/C, I used the rubber wheel chocks when I connected the Globe Liner to the Tanker Trailer. The liner didn't lack power even with the 10-pound Tanker Trailer attached; it still hauled. As a side note, I would not recommend that anyone run the truck in reverse in second or third gear; the trailer could easily jackknife—just like the real ones.

I was happy to see—and hear—that the electric light system performed as well as the rest of the truck. The system includes automatically activated left and right turn signals, brake lights and a reverse-warning beeper. In addition to the turn signals, there are five roof lights and four headlights, all of which I found to be surprisingly bright. Mounted on the back of the cab are four toggle switches and a



As you can see from this photo, the servo on top controls the steering functions while the servo underneath is in charge of shifting the 3-speed tranny.

power light that activate the headlights, roof lights and hazard lights. Through the main circuit board's four adjustments, you can control beeper tone, beeper sensitivity, brake sensitivity and turn-signal intervals.

FINAL THOUGHTS

There is no doubt in my mind that the Globe Liner, combined with the Tanker Trailer, is one of Tamiya's best sets. Although the kits are a little pricey, they deliver high-quality materials, a shift-on-the-fly transmission and realism right down to the last rivet. The two kits provide a working, highly detailed model, with all of the features that you could imagine. Adding the Rig Light Set and Semi-Trailer Light Set only improves an already exceptional model. The only thing missing from the Tamiya Globe Liner is a CB radio!

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Air vent ed endbell, three capacitors included, Silver "R"

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Parking Lot's **NEWEST**



CONTESTER

by Doug Mertes

Kyosho Impress

IT USED TO be that "serious" racers sneered at F1 cars. "They're too much like toys...there aren't enough adjustments...they can't take serious horsepower...and everything's made out of plastic" were typical of the comments heard in the pits when F1 cars and parking lot racing were discussed.

Well, no more, guys! You pan-car aficionados better move aside, 'cause there's a new kid in town, and its name is Kyosho* Impress. This is the first serious F1/Indycar chassis developed for the true racer, and it blows the socks off everything else in its class. Don't believe me? Check out the way this on-road screamer is put together!

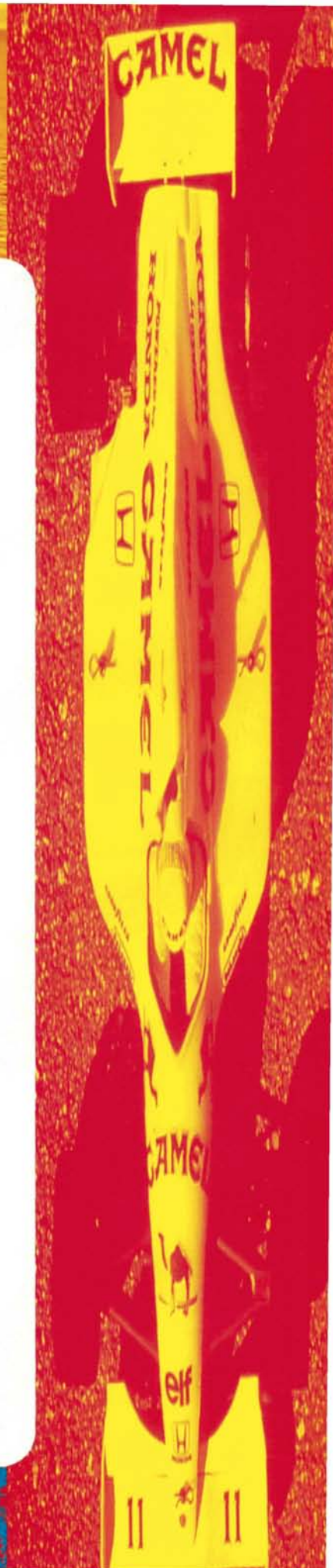
KIT FEATURES

- **Rear pod.** Almost every F1 rear pod consists of a fiberglass plate (the T-bar) that's attached to the chassis at two points with screws and rubber O-rings. Early cars had a simple shock-absorber arrangement that allowed the driver to adjust rear traction slightly. In some cars, the roll rate of the rear pod, as it twists in reaction to steering input and track surface bumps, is controlled by a pair of flat pucks pressed against a plate by small coil springs. The actual damping rate is adjusted by using various weights of silicone or shock fluid on the pucks and plates to provide more or less roll resistance.

The designers of the Impress used this basic setup, but with some key refinements: the plate is absolutely rigid and is part of the center chassis bridge that's supported by the radio posts; the puck assembly is as close to the rear pod as possible; and the mounting system for the entire assembly is simpler and stronger than any other chassis I've ever seen. The rear pod is completely boxed, and it allows easy motor access between races.

Notice the lovely, optional, machined-aluminum shock that's attached to the damper post; it does a better job of controlling ride height than the spring post that comes with the kit. The accessory pistons, which are included as spare parts, allow damping adjustment for different track conditions.

PHOTOS BY DOUG MERTES



KYOSHO IMPRESS

• **Front suspension.** Though everything we've looked at so far has been a refinement of existing designs, the Impress's front suspension is a radical departure from any previous F1/Indy chassis offering. The "foundation" comprises a set of lower arms—with hefty mounting screws that are closer together than on previous Kyosho cars—and a beefy lower bracket. At the end of each of the lower arms is a small plate that controls negative camber. The plates marked "S" have a small amount of camber, and the plates marked "L" have much more. My camber gauge showed 2 degrees with the S-plate and 4 degrees with the L-plate.

More camber makes the car want to turn in—or initiate a turn—more quickly. It also

tends to wear out the inside edge of a tire more rapidly on high-bite surfaces. If the car feels too darty with the high camber setting, switch to a lower setting. Each plate also contains a small aluminum ball through which the kingpin passes on its way to the upper arms.

Ah, yes, the upper arms. These are fully articulated and are mounted on the chassis end with a pair of pivot balls that are securely fastened to the lower arm brackets. On the other end, things are held in place by the steering spindle, axle and kingpin. By swapping the upper arms from one side to the other, fixed caster can be increased or decreased. A small arrow molded into the underside of each arm helps you to figure

out how to set the caster.

More caster typically gives you more steering coming out of a turn under power, while less caster usually gives you more steering going into a corner. Too little caster can make the car exceedingly sensitive to steering input on the straights, while too much can make it hard to get around tight corners without hitting the brakes and losing time. Being able to properly set caster and camber is necessary for the truly serious on-road pilot.

Finally, like Trinity* and Associated*, Kyosho has also equipped their latest offering with reactive caster suspension up front. Since the pivot balls are mounted at different heights in the front and the rear, caster is reduced as the suspension is compressed. This means that you can set the front end up for long, sweeping turns on the track and still be able to get through the tight, twisty parts without compromising handling.

• **Steering.** The steering servo is centrally mounted, which allows the steering linkage to be set up properly with turnbuckles of equal lengths. The mounting method is a little strange; it involves one of two servo boxes (depending on servo size) that captures the servo case with trimmed wedges that are trapped by the chassis plate.

The kit comes with Z-bend steering linkage, but it isn't my favorite setup, so I used some steel Du-Bro* turnbuckles and Kyosho ball links for a nice, tight, bullet-proof setup. You can see in the pictures that I had to carve out some of the lower suspension-arm bracket to provide clearance for the ball links, but it wasn't a big deal. It was a little harder to figure out how much of the upper-bridge mounting bracket to remove; I wound up running one long 3x32mm screw up through the front wing mounting bracket to the upper bridge and securing it with a nut. Measure carefully and take your time. A Dremel sanding drum worked well for me here.

Though the upper bridge bracket looks extremely cool, I doubt that it adds much rigidity to the chassis. The bracket isn't very beefy, and it actually becomes distorted just a little bit when stress is applied from the front to the rear. If you use the accessory graphite chassis, as I did, instead of the kit's fiberglass one, you can probably leave the upper bracket off altogether, though the kit's standard fiberglass chassis plate is exceptionally rigid, too.

• **Wheels.** The Impress comes with a full set of ball bearings that includes four for the front wheels and six for the rear axle and a fully enclosed ball differential. For Kyosho, this is a new diff design in which the diff rings are keyed to fit into recesses in the



likes 

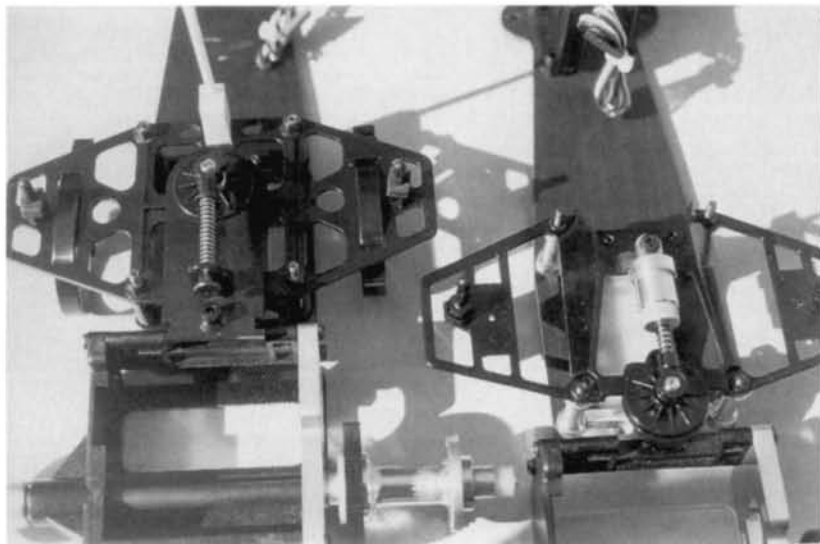
- The absolutely rigid chassis.
- Completely adjustable suspension.
- Very easy to dial in to almost all track conditions.

dislikes 

- I prefer to use a turnbuckle-style setup on the steering assembly rather than the included wire steering linkage.



As you can see from this shot, the electronics fit easily, especially when you use a mini-receiver and a small servo.



Note the differences in rear damper design. The new car's damper post is very close to the rear pod, while the older car's is almost 2 inches away.

diff hub halves, so there's no need to pin or glue the rings into place. The kit comes with two, true, 48-pitch spur gears, but I chose, instead, to install one of CRC's* excellent, 96-tooth, 64-pitch spurs that are made for F1 cars.

The kit comes with black plastic wheels that work well, but I already had a set of chrome-plated rims from a previous project, and they added a bit of flash to the car. The kit includes double-sided tape for mounting the foam tires on the wheels, but I prefer contact cement and lacquer thinner; either method will do.

Like most pro-level racing chassis kits, the Impress doesn't include a body, although it does come equipped with a lovely Ferrari F93A front bumper wing and an adjustable, ABS "Maisonnette"-style rear wing. With its additional forward-mounted upper level, this rear wing is exactly like the ones seen on full-size Ferrari and Footwork cars until they were banned earlier this season. The wing was pretty neat, but I thought that a car this special deserved true concours treatment.

I've been a Formula 1 racing fan for some time, and I've collected a number of out-of-print decal sets for cars that were raced years ago. One of my favorites is the one for the 1987 Lotus Honda 99T that was driven by the late Ayrton Senna and Satoru Nakajima. It's a real eye-popper, done up in bright, "Camel" yellow.

I used the Kyosho Williams FW14B body set for my car, since I knew from experience that its front wing provided the right amount of downforce. On the back, I installed the ABS rear wing from a Tamiya* Footwork Mugen Honda. All

I had to do was shave off the ridge that runs around the base plate so that it would fit flush against the rear pod. I sprayed both the front and the rear wings with ModelMaster* gray primer and then with seven or eight light coats of Pactra* Daytona Yellow. I let them dry for several days, then I shot them with a few light coats of ModelMaster clear coat. It was easy to spray the body with Daytona Yellow backed with Sprint White, because the Kyosho body comes with a protective film that covers the outside; no over-spray problems here! It took another hour or two, with help from my World Atlas of Motor Racing, to get all of the decals placed just right and to properly detail the driver's compartment with a fine-bristle brush and some modeling paint.

TEST GEAR

I have a favorite setup when I race on-road vehicles, and I used it here. A Tekin* 411P electronic speed control gives me smooth, flowing throttle control, while its high-frequency operation saves the motor commutator. Battery-regeneration circuitry and torque control give me confidence that I won't dump during the last few laps, even when the racing is really close. A Novak* NER-3 FM receiver catches the signal from my JR*-756 transmitter, and a Futaba* 9601 ball-bearing, high-speed servo puts the front wheels right where I want them. The antenna wire runs up a fiberglass, rollover antenna rod, just in case I get airborne.

The "Formula Fun" class at my local track requires that a club motor and a handout battery pack be used, so I wired the ESC with a Tamiya plug. For

Things You'll Need

Here are the items you'll need to get the Impress on the road to victory.

- A 2-channel radio system.
 - A 540-type motor.
 - An ESC.
 - A battery pack.
 - A charger.
 - A Lexan F1 or Indy-style body.

- Graphite axle—part no. FJW-02
- Axle mount special (heat-sink motor mount)—FJW-03
- Oil shock—FJW-07
- High-performance ball diff—FJW-08
- Foam tire caps—FJW-09
- Chrome wheels—FJW-11
- Suspension kit—FJW-20 (requires oil shock)
- Graphite chassis—part no. not available

Factory Options

Building and Setup Tips

Like most F1 kits, the Impress is a pretty straightforward proposition. Total construction time is about two hours; though this doesn't include painting and detailing the body and wings. There are a few areas, however, where you really have to pay attention to make sure that the car will handle the way you want it to.

- When you install the tweak screws (using either the supplied front flex-plate bridge or an aluminum one) don't use the front O-ring. All flexing will then occur at the rear mounting hole and rear O-ring. If you glue a small piece of brass or aluminum shim onto the top of the front of the flex-plate (on either side of the mounting hole) the tweak screws won't dig into the plate and change the tweak setting.
- Carefully measure the height of each pivot ball on the lower front-suspension strut before installing the upper suspension arms. There's a 1mm difference in installed height between these two balls, and they play a crucial role in affecting the reactive caster as the suspension is compressed.
- I removed some of the material from the lower strut support to provide enough clearance for a larger servo-saver and a turnbuckle steering linkage. If you use the stock servo-saver and wire front linkage, you'll have just enough clearance. I also used a fairly small Futaba 9601 servo, although a 132S servo or larger would also have eliminated the clearance problem.
- Double-check the camber ends (the lower plate that's screwed onto the lower strut) and the direction of the arrow on the upper suspension arms. I thought I was setting the car up for lower caster settings, but I set it for high caster by mistake. As soon as the car hit the track, I knew something was wrong; I flipped the upper arms to correct the problem. If you need more steering, first try the lower caster setting, then the higher camber setting.
- The chassis isn't ride-height sensitive (there's plenty of ground clearance), but I found that the best handling was with 56mm front tires and 59mm rears made of the kit-supplied rubber.

KYOSHO IMPRESS

my initial test, however, I installed a motor that I'd made up on the workbench in my secret underground test lab: a trued and balanced 21-turn single ProCar* armature in a 24-degree Green Machine* can with Trinity 4038 hard brushes and silver hard springs. Properly geared and in a lightweight car, this motor produces punch out of a turn that has to be experienced to be believed!

I used the Kyosho special metal motor mount instead of the plastic one that came with the kit. The metal mount maintains the bearing clearances and the gear mesh more

accurately, and it also keeps the motor running a little cooler during those long heats.

The accessory aluminum radio posts used on this car, however, are even more rigid than the plastic ones and look better to boot! Both types of radio posts come with holes for tweak screws pre-drilled and threaded. Use them or die a thousand deaths of shame when your car pulls to one side under acceleration!

The graphite chassis I used, by the way, was from the previous Kyosho F1/Indy series. That meant I had to measure, drill

and countersink four new front-suspension holes so that everything would fit properly.

PERFORMANCE

First, I took the Impress to my local parking-lot testing ground. The surface is in pretty good shape, without potholes or gravel. Right off the bat, I was struck by the car's tremendous traction—especially rear traction. F1 cars tend to be a little twitchy on a parking lot, and they'll swap ends on you in a heartbeat if you're not careful. I've run every commercially available chassis of this type, and I have to say that the Impress does better than any other on an asphalt surface. Even with the power that my bargain motor was putting down, the car was exceptionally sure-footed. By slowly dialing up the torque control during the run, I was eventually able to get the car to spin out, but it took a lot more work than I expected.

Next, my car and I visited the carpet track for a workout. I run in a regular weekly series called Formula Fun, in which the emphasis is on driving skill and chassis setup, rather than on batteries and motors. You can run any brand or kind of car you want, with any modifications, as long as it has an F1/Indy body. When you first join the Formula Fun series, you're given a Mabuchi* motor (zero timing), and when you sign up for a race, you're given a hand-out battery. The cars all run at the same top speed, so the key is to drive a clean line and to be consistent through the 6-minute heats and 10-minute Main.

Once again, the Impress was easy to dial in to the tight, twisty 1/12-scale carpet track. I used the lowest camber and lowest caster settings, and I increased the tension on the rear T-bar screw until I had the right balance between the front steering and the rear traction. Within a few laps, I was running as fast with the Impress as I have with any of my other cars. If I can dial it in that quickly, imagine what a little development time could do!

FINAL THOUGHTS

I'm excited about the new Impress from Kyosho. Because it is the first pro-level, racing-type Formula 1 chassis kit, the Impress breaks new ground in design and execution, while adding refinement to the features that it shares with other kits. If you're looking for a way to deal with a variety of racing surfaces, no other F1 car on the market today can come close to offering such sophisticated suspension adjustments!

*Addresses are listed alphabetically in the Index of Manufacturers on page 200.

SPECIFICATIONS

Scale1/10
List price.....\$199

DIMENSIONS

Overall length15.2 in.
Wheelbase.....9.8 in.
Width (F/R)7.9 in.

WEIGHT

Gross (w battery, ready to run)34 oz.

CHASSIS

Type.....Formula 1 Indy
Material.....Fiberglass

DRIVE TRAIN

Type.....Direct drive
Primary.....Pinion spur
Transmission.....None
Differential.....Ball
Slipper clutch.....None
Bearings/bushings.....Bearings

SUSPENSION

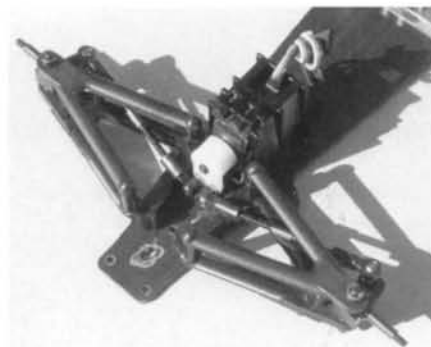
Front.....Reactive caster
Damping.....None
Rear.....T-bar flex plate, damper disk
and plate damper
Damping.....Spring rod

WHEELS (F/R) ...Plastic, one-piece, 37mm

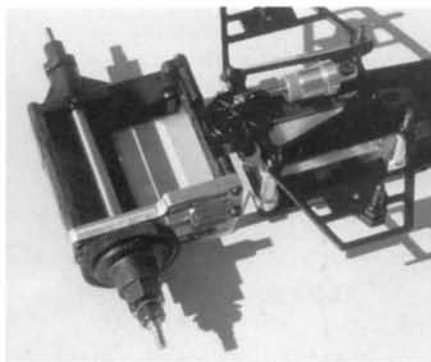
TIRES (F/R)Medium foam

ELECTRICS

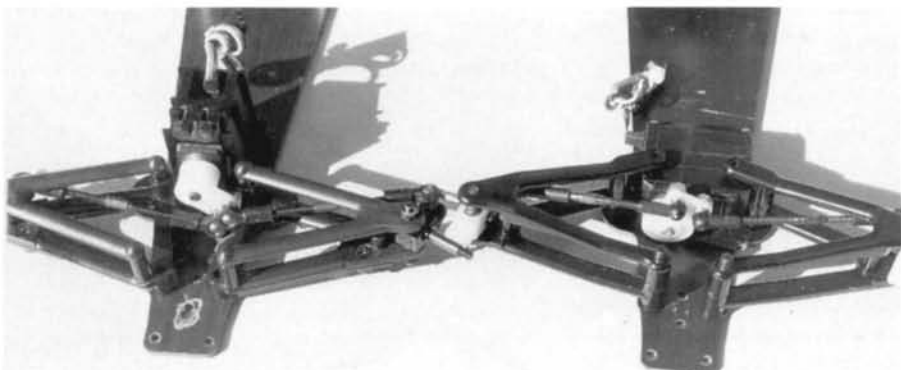
Motor, battery, ESC.....Not included



The new front end has adjustable caster and camber, as well as reactive caster suspension and articulated upper arms. Part of the lower bracket had to be trimmed away to fit the ball linkage.



The new, fully enclosed, ball diff has keyed diff rings that eliminate the need for gluing and pinning.



This comparison of old (right) and new (left) front suspension really illustrates the differences between the two.

The off-road R/C category has always been popular. There's just something about hitting big jumps and driving through gnarly terrain that's very appealing. Well, when it comes to off-road racing, the 2WD buggy class is one of the more heavily populated divisions. These buggies require a more precise hand to help them finesse their way through the tight, technical sections of a racetrack, and basically, they're just really cool!

Well, if you're interested in racing 2WD buggies during the upcoming season but you aren't sure which buggy is best for you, you've come to the right place.

We gathered the six hottest racing 2WD off-road buggies on the planet and compared their features—head to head. As a bonus, we've included really hot tips from pro team drivers on how to set up, tune and drive your 2WD buggy into the winners' circle. So, enjoy!—and good buggy hunting!

1995

2WD Buggy Guide

Tamiya • Dyna Storm

Team Losi • Double-X

Traxxas • TCP

Associated • Worlds Car

Schumacher • Cougar 2000

Kyosho • Pro-X

Back in 1987, Kyosho* won the IFMAR Off-Road World Championships with their hottest buggy at the time—the Ultima. Well, it looks as if Kyosho is gearing up to make another attempt at winning some races with an all-new buggy. Their latest vehicle—the Pro-X—is the result of years of R&D. The Pro-X Team Buggy has many of the features found on Kyosho's new electric truck (the Pro-XRT), but it has certain refinements that were designed especially for this electric buggy.

• **The transmission** is Kyosho's compact Super Sprint, which is equipped with 11 ball bearings for smooth, consistent power delivery. The spur gear was designed to be easy to replace without having to re-set your slipper settings.

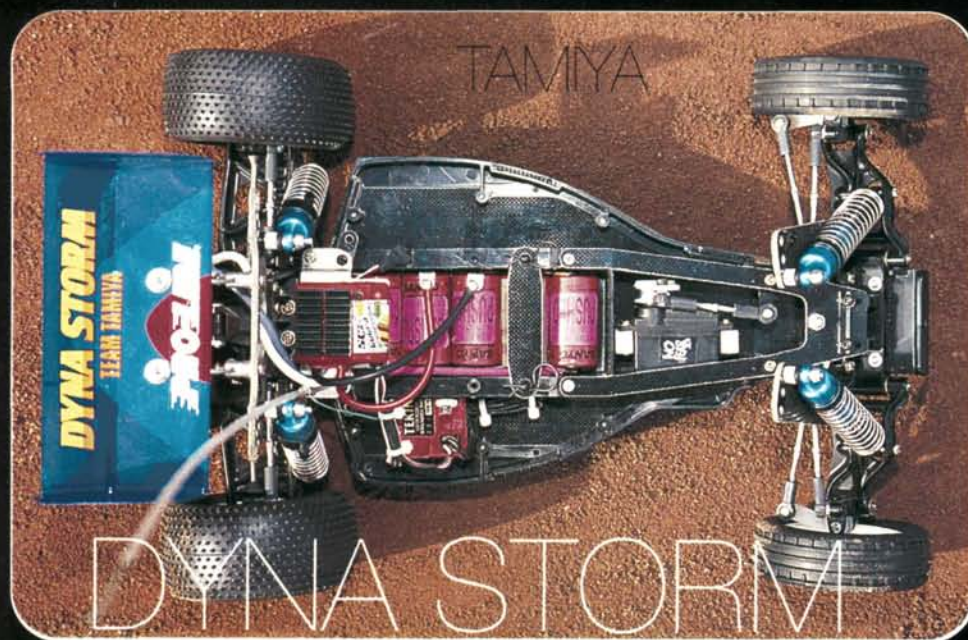
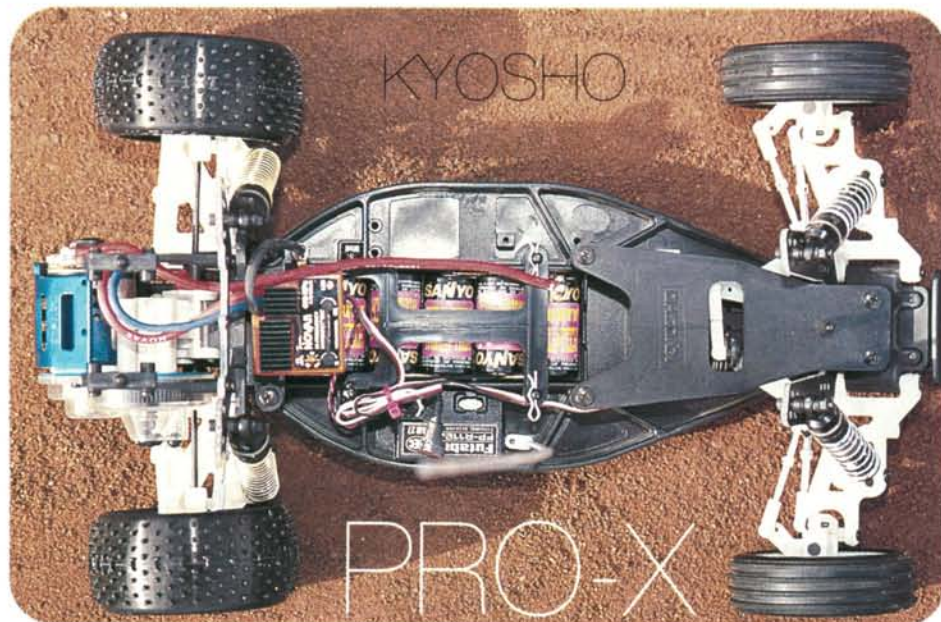
• **The suspension** system is very versatile and can adapt to any track surface. The wheel-base and rear toe-in can be adjusted easily, and the "floating ball" hinge-pin design keeps the pins aligned for bind-free movement. All suspension links are adjustable as are the mounting points on the shock towers and hub carriers. The suspension arms are made of a very stiff composite, and they're wide, so they're great for handling the rough stuff. Up front, the Pro-X

uses an inclined kingpin design that's found on full-size cars. This design angles the kingpin so that the tires' contact patch is directly on the rotation point of the steering block.

• **The new Kelron II chassis** was designed to be light and rigid. To keep the front assembly strong and solid, a separate nose brace is used with it. For the ESC, there's a molded shelf that's up off the chassis and

allows cooling air to flow easily through the heat-sink fins. A molded brace holds the battery in the chassis.

• **New Ultimate oil shocks** made of hard, anodized aluminum ensure smooth, consistent damping; and they have O-ring seals as well as a rubber seal for the shock shaft.



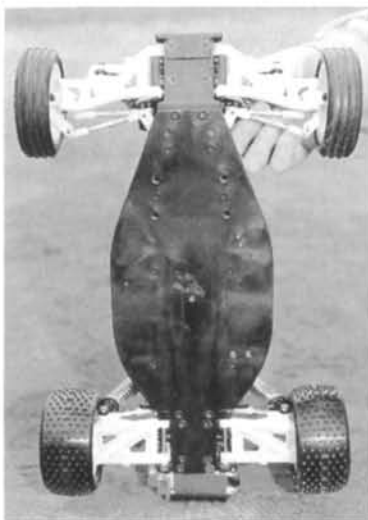
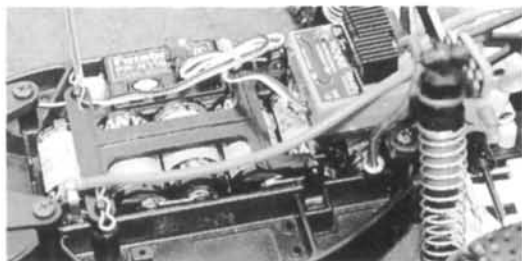
Though Tamiya* isn't known primarily for producing hardcore off-road racing machinery, the Dyna Storm is their best effort to date. The Dyna Storm features an ultra-rigid, reinforced-fiberglass and epoxy resin, double-deck design. A raised, resin side guard helps to prevent dirt from collecting on the chassis.

• **Front and rear suspension arms** are made of a durable, rigid polycarbonate material; a thin metal cross-brace reinforces the rear arms to minimize fore-and-aft flexing. The rear bulkhead features four camber-rod mounting holes for tuning versatility. Extra-thick front and rear fiberglass shock towers provide many settings for ride height and shock angle.

• **The Tamiya metal damper units** are unique. They aren't hard-anodized, but they do have a poly-sleeve insert and piston that work together for a friction-free system. When the shock wears, you just replace the poly-sleeve and piston (and shock shaft and seals, if necessary)—not the whole shock body.

• **A sealed, 3-gear transmission** has 11 sealed ball bearings, so the drive train is smooth and reliable. The tranny has Tamiya's adjustable, racing-style ball differential and multi-disk friction slipper unit, both of which can be externally adjusted. A thick plastic gear cover with a quick-release, twist-off cap allows quick and easy clutch adjustment.

• **Other features** include: stainless-steel turnbuckles; lightweight star-dish wheels; an extra-thick, heat-sink-aluminum motor plate; bronze bushing inserts at each pivot point to reduce slop; and a bushing-supported bell-crank steering assembly.


KYOSHO • PRO-X

Scale1/10
Price.....\$249.99

DIMENSIONS

Overall length.....15 in.
Width.....9.30 in.
Wheelbase.....10.5 in.
Front track.....8.4 in.
Rear track.....7.9 in.

WEIGHT

Gross (with batteries).....3 lb., 8.53 oz.

CHASSIS

Type.....Molded two-piece
Material.....Kelron

DRIVE TRAIN

Type.....Sealed gear
Primary.....Pinion/spur
Differential.....Adjustable ball
Bearings/bushings.....Ball bearings

SUSPENSION (F/R)

Type.....Independent A-arm w/ upper camber link
Damping.....Oil-filled, coil-over shocks

WHEELS

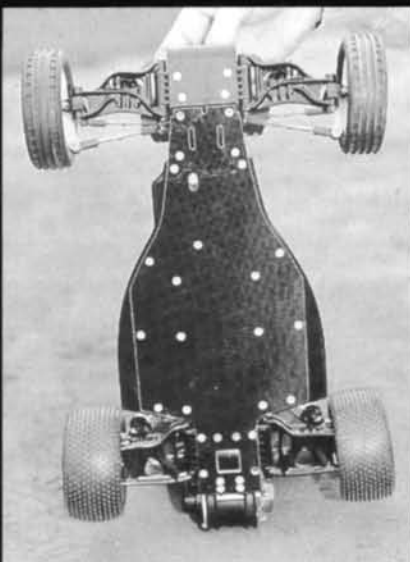
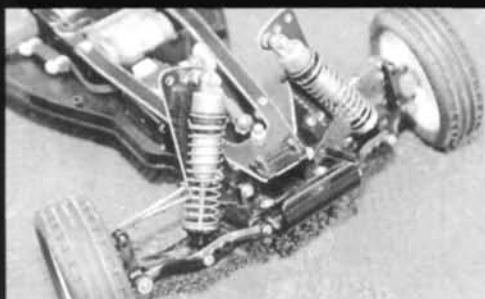
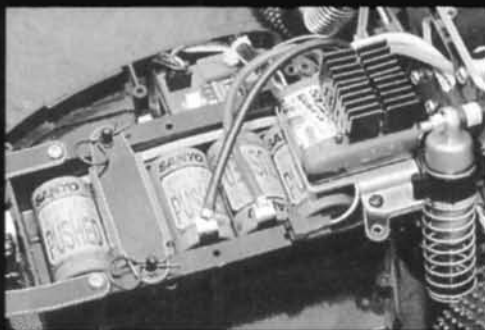
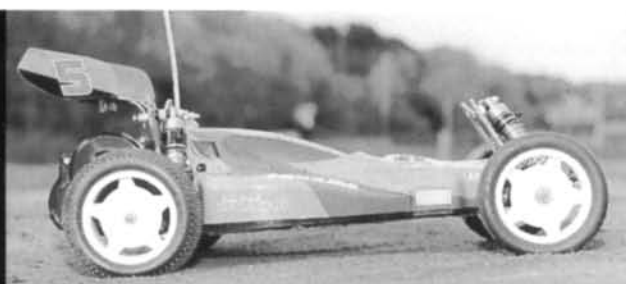
Front: type.....One-piece molded
Dimensions (DxW).....2.2x0.875 in.
Rear: type.....One-piece molded
Dimensions (DxW).....2x1.375 in.

TIRES

Front.....Kyosho 4-rib
Rear.....Kyosho W5641 H-pattern

ELECTRICS

Motor, batteries, speed control.....Not included


TAMIYA • DYNA STORM

Scale1/10
Price.....\$244.95

DIMENSIONS

Overall length.....15 in.
Width.....9.625 in.
Wheelbase.....10.1 in.
Front track.....8.6 in.
Rear track.....8 in.

WEIGHT

Gross (with batteries).....3 lb., 9.91 oz.

CHASSIS

Type.....Dual-plane plate
Material.....Fiberglass/plastic

DRIVE TRAIN

Type.....Sealed gear
Primary.....Pinion/spur
Differential.....Adjustable ball
Bearings/bushings.....Ball bearings

SUSPENSION (F/R)

Type.....Independent A-arm w/ upper camber link
Damping.....Oil-filled, coil-over shocks

WHEELS

Front: type.....One-piece molded
Dimensions (DxW).....2.2x.875 in.
Rear: type.....One-piece molded
Dimensions (DxW).....2x1.375 in.

TIRES

Front.....Rib/spike
Rear.....Spire spike

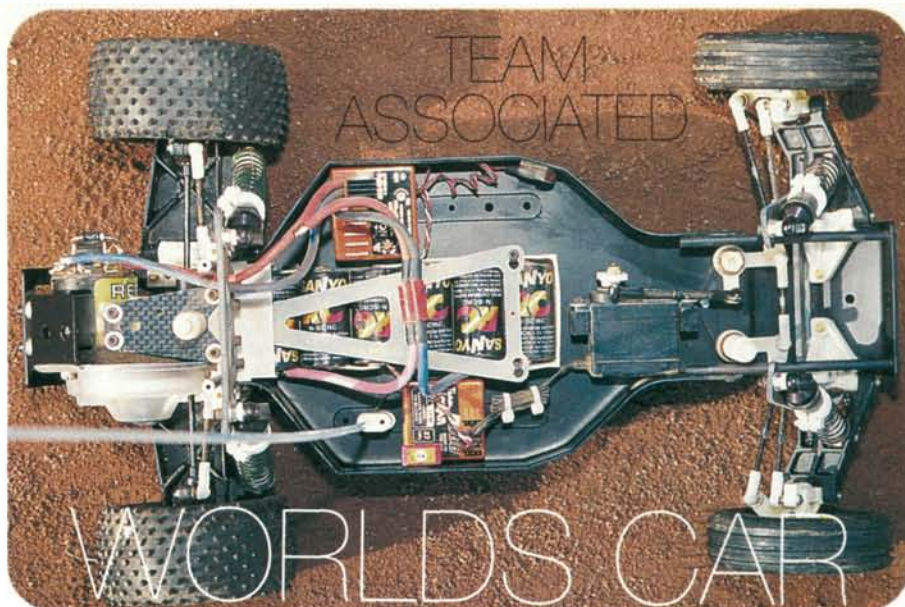
ELECTRICS

Motor, batteries, speed control.....Not included

This all-new version of Associated's* popular RC10 Team Car features all the latest, trick, hop-up items that were used on the '93 IFMAR World Championship car.

- **Its chassis** has been stamped out of a stronger grade of aluminum and has been milled out to save weight. The nose plate has been modified by removing excess aluminum from the area surrounding the holes through which the attachment screws are threaded—another weight-saving bonus.

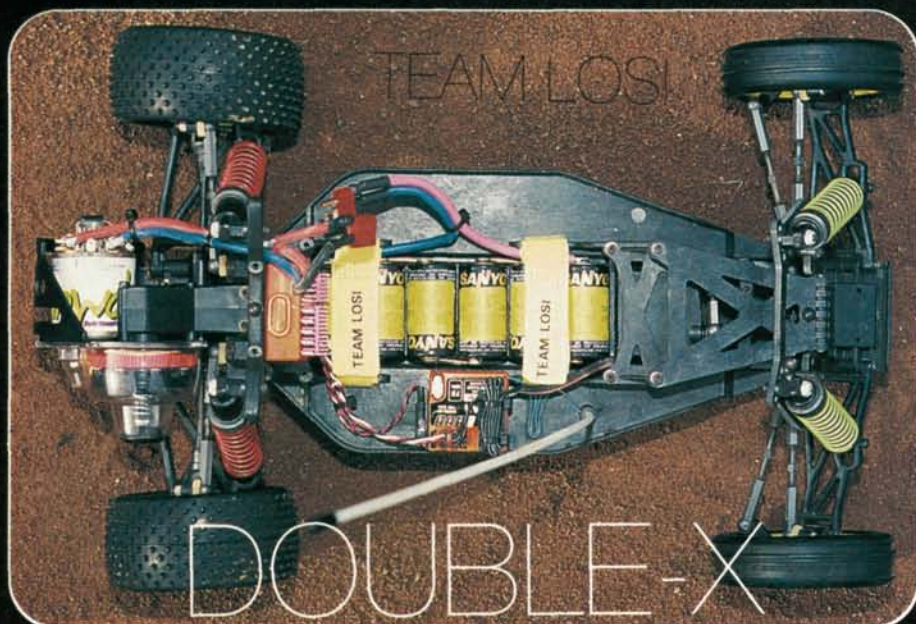
- **The suspension** department has been given a major revamp as well. The new, black, composite arms are stronger than their predecessors, and stronger shock towers made of graphite-laminated fiberglass grace the car's front and rear. Shorter rear shock shafts (1.02 inches compared with the Team Car shafts of 1.32 inches) limit rear suspension travel, and that keeps the shock piston consistently in the shock oil. Also, new Teflon™ shock seals provide a more precise fit within the shock body. Last, but not least, in the suspension department, there's a new rear bulkhead that matches the height of the transmission. Now the tranny can be bolted on flush; there's no need to use spacers; and it has a few additional camber-rod holes that weren't on the original.



- **The tranny**—the ever-popular Stealth—has been slightly revamped, but it's basically the same; it has an externally adjustable differential with hardened-steel outdrives, tungsten-carbide diff balls, sealed ball bearings and an Associated traction-control friction slipper clutch. In the slipper-clutch assembly, a new solid bushing replaces the bearing to help increase off-the-line acceleration. The tranny comes with a 48-pitch, 81-tooth spur gear; a graphite tranny brace (previously only available

as an optional piece) comes standard.

Among its other features are: a new, molded-nylon solid bellcrank steering system, which rides on bronze bushings; Pro-Line* XT compound four-rib tires up front and XTR compound Flat Stubbies out back; new, lightweight, neon yellow, one-piece wheels; three-piece neon yellow front wheels; an RCPS* Turbo Mirage body (now standard issue); and 30-degree caster blocks.



Team Losi's* Double-X is nothing like its predecessor, the Pro-SE. The key to the car's success is its modular design. By taking out a few screws, you can remove the entire rear-end assembly (suspension intact), or just the transmission. The front end features a hinged front bulkhead that allows you to swing the suspension out of the way for quick and easy access to the steering servo and steering linkage. Without a doubt, it's one of

the easiest cars to work on and one of the easiest to build.

- **The low-center-of-gravity Losi G-Tunnel chassis** is made of an extremely stiff composite material—"Stiffezell"—and has raised sides to increase ground clearance. The battery tray runs along the middle and allows you to use a foam spacer to position the batteries more to the front of the car (to enhance

steering), or more to the rear (for additional traction).

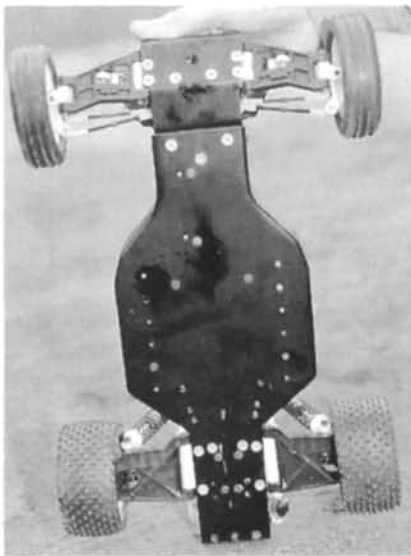
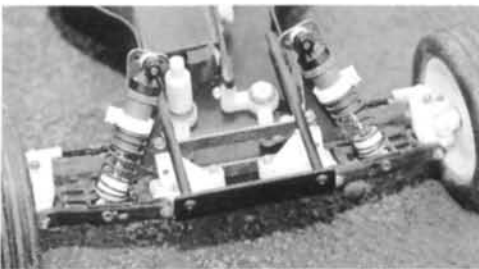
- **Long front and rear suspension arms** molded of the same composite material give the buggy a wide stance that provides more stability in the rough sections. Losi's Hard Body, hard-anodized shocks provide the damping on each end.

Up front, owing to the front wheels' offset, the bearings had to be incorporated in the steering arms. This design positions the kingpin directly in the center of the disk-type wheels, and this eliminates the possibility of what's known as "jacking"—the pendulum action of the chassis that occurs when the front wheels are forced to rotate around an offset kingpin.

At the back, the buggy's pivot support gives the arms 4 degrees of anti-squat, and the rear hub carriers provide 3½ degrees of toe-in.

- **The Double-X 3-gear transmission** is equipped with an externally adjustable differential. The case configuration leans backward and lowers the center of gravity. The top shaft brings the slipper unit and included Hydra Drive closer in toward the motor plate, which is angled up in the rear to allow more ground clearance.

- **Other features** include a unique steering-bellcrank assembly that has a servo-saver system. An equally unusual servo-mounting arrangement provides universal servo-mounting posts and an assortment of arms to suit the servo you choose to run. When the servo has been mounted, it stays put for good.


TEAM ASSOCIATED • WORLDS CAR

Scale 1/10
List price \$337

DIMENSIONS

Overall length 15.25 in.
Wheelbase 10.5 in.
Front width 9.625 in.
Rear width 9.625 in.

WEIGHT (ready to run) 3 lb., 10 oz.

CHASSIS

Type Stamped tub
Material Aluminum

DRIVE TRAIN

Primary Pinion/spur
Transmission Sealed gearbox/gear reduction (2.25:1)
Differential(s) Adjustable ball diff
Slipper clutch Adjustable friction slipper
Bearings Metal-sealed bearings, Teflon-sealed outdrive bearings
Drive shafts Universal joint

SUSPENSION (F/R)

Type Independent A-arm w/upper, adjustable camber link
Damping Oil-filled, coil-over shocks w/hard-anodized bodies

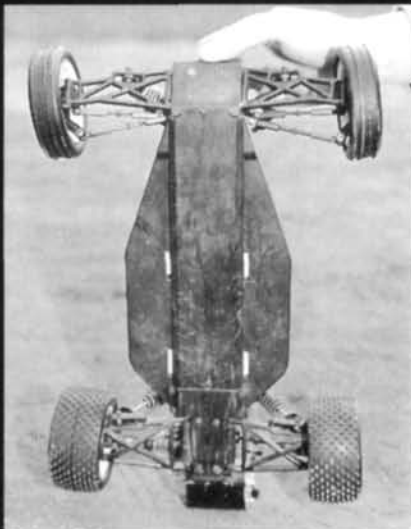
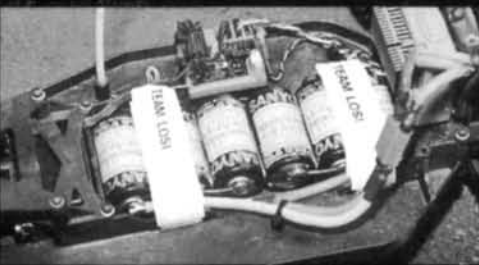
WHEELS

Front: type Three-piece molded nylon
Dimensions (DxW) 2.2x0.75 in.
Rear: type One-piece molded nylon
Dimensions (DxW) 2.175x1.375 in.

TIRES

Front Pro-Line four-piece ribbed
Rear Pro-line pro-86 XTR Flat Stubbies

ELECTRICS Not included


TEAM LOSI • DOUBLE-X

Scale 1/10
Price \$339.95

DIMENSIONS

Overall length 15 in.
Wheelbase 10.625 in.
Front width 9.625 in.
Rear width 9.875 in.

WEIGHT

Gross (with batteries) 3 lb., 8.5 oz.

CHASSIS

Type Three-piece modular
Material Molded composite "Stiffzell"

DRIVE TRAIN

Type Sealed gear drive (2.19:1 reduction)
Primary Pinion/spur (88-tooth spur incl.)
Transmission Universal-joint/dogbones
Differential(s) Racing-ball diff
Slipper clutch Friction w/Hydra Drive
Bearings/bushings Sealed ball bearings

SUSPENSION (F/R)

Type Independent A-arm w/adjustable camber link
Damping Oil-filled, coil-over shocks

WHEELS

Front: type Double-X offset w/dirt shield
Dimensions (DxW) 2.1x0.75 in.
Rear: type 22-Caliber w/dirt shield
Dimensions (DxW) 2.2x1.625 in.

TIRES

Front A-7201 HT Ribbed
Rear A-7364 HT IFMAR Stud

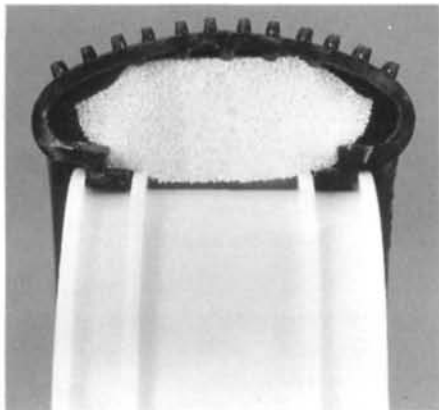
ELECTRICS

Motor, battery, ESC Not included

Tuning And Setup Tips

by George Gonzalez

You always have your buggy in top-notch condition for every race. For hours, you go over your car and dial it in to the track, and then you finish second to your buddy. But—wait a minute!—you both have the same car, you put roughly the same time into working on it, and you're equally skilled drivers. So why does he keep beating you? Well, maybe he pays attention to the little details that you don't. Check out these quick tips on getting your buggy up to speed, and then go out there and put a major whuppin' on him!



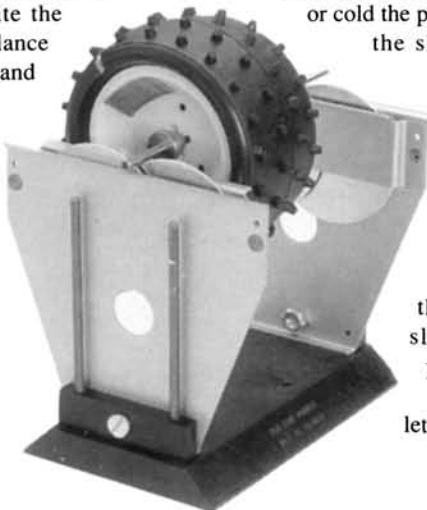
foam facts

MOUNTING YOUR ELECTRONICS

Mount your receiver on the chassis with Velcro®-brand-fastener instead of servo tape. This will help to reduce vibration, which will, in turn, reduce radio interference. It will also allow you to remove the receiver from your car and use it in other R/C vehicles.

Next, mount the ESC directly on the chassis on the side opposite the receiver. The idea is to balance the weight of the receiver and the ESC evenly on the chassis. Many racers make the mistake of mounting either the receiver or the ESC on the shock tower; this increases the car's center of gravity and throws the balance off as well.

wheel wonders



FOAM INSERTS

Foam inserts dramatically improve a car's performance on bumpy tracks and also help to support the contours of today's softer tire compounds. Fortunately, foam inserts are included with many tires; when they aren't, it would be wise to install them before you glue the tires to the wheels.

First, trim the inside corners of the tires to clear the mounting bead and the wheel ribs. Next, trim the flat edges of the foam insert with scissors to obtain a better fit. Finally, to ensure a proper seal, trim all the flashing off the inside of the tires before you glue on the wheels. Taking these extra steps will make the wheels and tires spin truer on your car.

Changes in the temperature can change your shocks' action—either by thinning your oil or reducing the shocks' capability to rebound.

PRE-RACE SHOCK BLEEDING

Changes in the temperature can change your shocks' action—either by thinning your oil or reducing the shocks' capability to rebound. If you rebuild your shocks the night before a race, be sure to bleed them before the race. This can be done in two ways and will depend on how warm or cold the place where you built the shocks was. If you

built them in an air-conditioned hotel room and plan to race outdoors where it's warmer, you'll have to "burp" them by loosening the shock cartridge slightly then compressing the shock shaft a few times to let out extra pressure.



shocking setups

The opposite would be true if you built your shocks where it was warmer and you plan to race where it's colder—let's say the R/C Car Action headquarters in Connecticut. You'd have to remove the shock cartridges, add oil, then rebuild the shocks according to the instructions.

WHEEL BALANCING

There are several tire-balancing products on the market, and they work extremely well, but there are other ways to balance wheels—ways that won't cost you any money. To balance the rear wheels, first remove one of the rear axle carriers. Next, remove the axle from the axle carrier and clean all the parts (especially the bearings) thoroughly; you want the wheel to spin as friction-free as possible. After you've cleaned all the parts, reassemble them, but don't install the drive pin. Finally, mount the tire on the loose axle carrier with a nylon locknut.

While holding the axle carrier in one hand, give the wheel a spin; it will always stop with the heavy side down. When it stops, mark the heavy spot with a scribe, and give the wheel another spin to confirm that you've marked the heavy side. Next, place a small piece of lead tape on the opposite side of the wheel to counterbalance the heavy side. Just keep adding tape, in small pieces, until the tire spins true and no longer has a heavy side.

The front wheels are much easier to balance than the rear wheels because you can leave them mounted on the stub axles. But it's critical that the bearings be clean and friction-free before you attempt to balance the wheels. Just follow the same steps as when balancing the rear tires, and you'll have a faster, more stable car. ■

I wish I could give you some advice to magically make you a world-class driver, but the truth is, there's no "magic" involved.

At the risk of sounding boring, *practice makes perfect*. There's simply no substitute for good old-fashioned practice. If you look at the top racers, you'll notice that they spend an insane amount of time practicing at the track; Brian Kinwald, for example, is at the track *every single day*. Granted, you may not have that kind of time, but the more effort you put into your driving, the better you will become. If you follow these suggestions and apply them to your practice routine, you should see an improvement in your lap times.

probably see that they're faster than before. And I guarantee that they will be much more consistent.

BRAKING UP!

Braking should be practiced, too. Many drivers go as fast as they can down the straight and drive deep into a corner. The result is that they have to brake in the corner and end up sideways. Remember what I said before about slower being faster? That applies here as well. By staying on the throttle too long and getting that extra couple of miles per hour out of your car, you drive right past the corner most of the time. It's best to back off the throttle a little earlier and—here



smoother; and some are totally unpredictable. For the most part, on small jumps, the car should leave the ground with the throttle on.

This will help to keep the nose up and prevent the car from nose-diving.

Always try different lines over a section of several jumps. Most of the time, there's a particular part that's much easier to get through. Remember, the key to better qualifying runs is consistency. It may be faster to hit a jump section one way, but if you crash even once, it can cost you all the time—maybe even more—that you gained.

Many drivers don't realize that, while the car is in the air, you can somewhat control its attitude with the throttle. Applying more throttle will raise its nose; hitting the brakes will drop the nose. Be careful when you first try this! Be especially careful when you hit the brakes in midair; this can make your car nose-dive hard. After a little practice with this, you'll be able to take a disastrous-looking jump and land on all four wheels.

When you feel more comfortable with jumping, start to practice your timing over the jumps. In other words, if there's a double jump, rather than flying 3 feet past the sec-

Driving Tips

by Jack Johnson



SOMETIMES, SLOW IS FAST!

It isn't always a good idea to grab a handful of throttle and try to go as fast as possible on every inch of the track. It's often better to drive smoothly. Look at it this way: if the track is slick and your tires spin when you try to accelerate, what will more throttle do for you? That's right—just make the tires spin more (and probably spin out).

If you watch the fastest drivers on the track, they usually look as if they're the slowest—until you pick up a stopwatch and check their lap times! Rick Hohwart always looks as if he's so slow that many people don't even bother to take his lap times. When they do, however, they find that he's always one of the fastest on the track. Rick rarely misses making an A-Main.

By driving more smoothly, you'll keep your car more consistently hooked up. Whenever it's sideways, it costs time on the clock.

- Start by driving *slowly*; stay to the *inside* of the corners.
- After a couple of laps, slowly *increase your speed*. You'll notice that you can take some corners much faster than others. Make mental notes of these corners. If your car gets loose on a corner, go a little more slowly next time through.
- Continue to increase your speed gradually until you're going as fast as you can without having your car slide around the track. It may take several battery charges to reach this point; then you'll notice a couple of things:
 - it's probably a lot easier to drive your car this way;
 - if you can check your lap times, you'll

comes the important part—*apply the brakes while you're going straight!*

If you slow down while your car is going straight, you'll be much less likely to go sideways, no matter how slick the track is. Having slowed the car, turn it into the corner. Remember not to apply too much throttle too soon; you don't want to slide sideways.

To make this technique easier to master, most of the top drivers set their throttle so that there's no static brake. When they let off the throttle, the car coasts without any brakes until they apply them. This makes it easier to apply brakes and then "roll" the car through the corner, slowly applying throttle.

GET A JUMP ON THE COMPETITION

Jumps can be one of the most difficult and challenging obstacles to master; it's a trial-and-error procedure, and jumps probably require the most practice. You'll usually take quite a few trips—and tumbles—over a particular jump before you figure out the best way to attack it. Typically, for a large, smooth jump, it's best to accelerate hard up to it and then back off the power when you hit its face, leaving the ground "off power." This does two things:

- it gets your car up to speed without upsetting its attitude on the face of the jump;
- when you back off the throttle, the face of the jump absorbs some of the energy, helping the car to fly straighter and more level.

Smaller jumps can be more of a problem because they're built differently. Some are short and sharp; others are flatter and

ond jump and landing hard on the ground, try to land on the far side of the second jump. The more your car is on the ground, the more control you have. Landing on the far side is particularly important if the jump is before a corner. By landing on that side, you can land with the brakes on and take the corner tightly. If you land past the jump, you'll have to wait for the suspension to rebound and then get the car into the corner. This can cause you to overshoot the corner.

PUTTING IT ALL TOGETHER

As I said, there's really no magic to driving like a pro. Like anything else, it just requires practice. Practice these techniques individually for a while. One day, concentrate on jumping; the next day, try driving more smoothly, or work on braking into high-speed corners. When you've practiced them all together, even if you don't turn a single lap faster than you did before, if you run more consistently without crashing, you'll be much faster at the end of a qualifying run or a main event.



TRAXXAS • TCP

Scale1/10
Price.....\$300

DIMENSIONS

Overall length.....15 in.
Width.....9.625 in.
Wheelbase.....10.5 in.
Front track.....8.4 in.
Rear track.....7.9 in.

WEIGHT

Gross (with batteries).....3 lb., 8 oz.

CHASSIS

Type.....Dual-plane plate
Material.....Fiberglass

DRIVE TRAIN

Type.....Sealed gear
Primary.....Pinion/spur
Differential(s).....Adjustable ball
Bearings/bushings.....Ball bearings

SUSPENSION (F/R)

Type.....Independent A-arm w/upper camber link
Damping.....Oil-filled, coil-over shocks

WHEELS

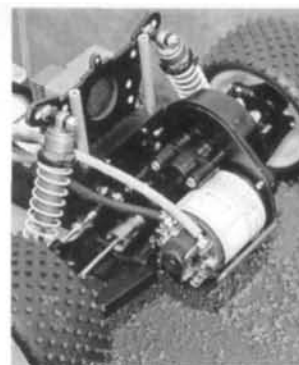
Front: type.....One-piece molded
Dimensions (DxW).....2.2x.875 in.
Rear: type.....One-piece molded
Dimensions (DxW).....2x1.375 in.

TIRES

Front.....Pro-Trax 4740 ribbed
Rear.....Pro-Trax 4751 mini-pin

ELECTRICS

Motor, battery, speed controller.....Not included


SCHUMACHER • COUGAR 2000

Scale1/10
Price.....\$349.50

DIMENSIONS

Overall length.....14.5 in.
Width.....9.50 in.
Wheelbase*.....10.75 in.
Front track.....8.70 in.
Rear track.....8 in.

WEIGHT

Gross (with batteries).....3 lb., 2.26 oz.

CHASSIS

Type.....Dual-plane plate
Material.....Fiberglass/plastic

DRIVE TRAIN

Type.....Sealed gear
Primary.....Pinion/spur
Differential.....Adjustable ball
Bearings/bushings.....Ball bearings

SUSPENSION (F/R)

Type.....Independent A-arm w/upper camber link
Damping.....Oil-filled, coil-over shocks

WHEELS

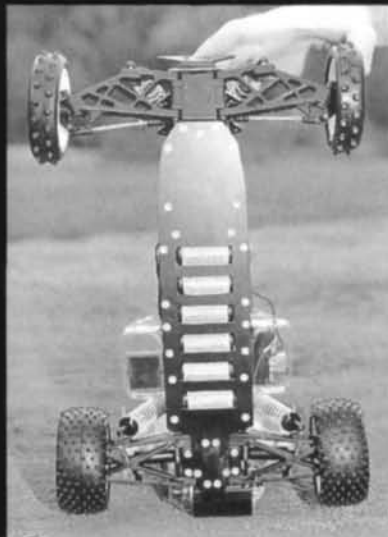
Front: type.....One-piece molded
Dimensions (DxW).....2.2x0.75 in.
Rear: type.....One-piece molded
Dimensions (DxW).....2x1.30 in.

TIRES

Front.....Schumacher two-row spikes
Rear.....Schumacher 12x20 mini-spike

ELECTRICS

Motor, batteries, speed control.....Not included



"TCP" stands for Total Competition Package. Basically, this racing platform begins with Traxxas's* latest racing buggy, the TRX-3, and goes from there. The kit includes parts and setup tips that allow racers to alter the car's drive line, wheel size, suspension travel and front-end geometry.

The car is equipped with:

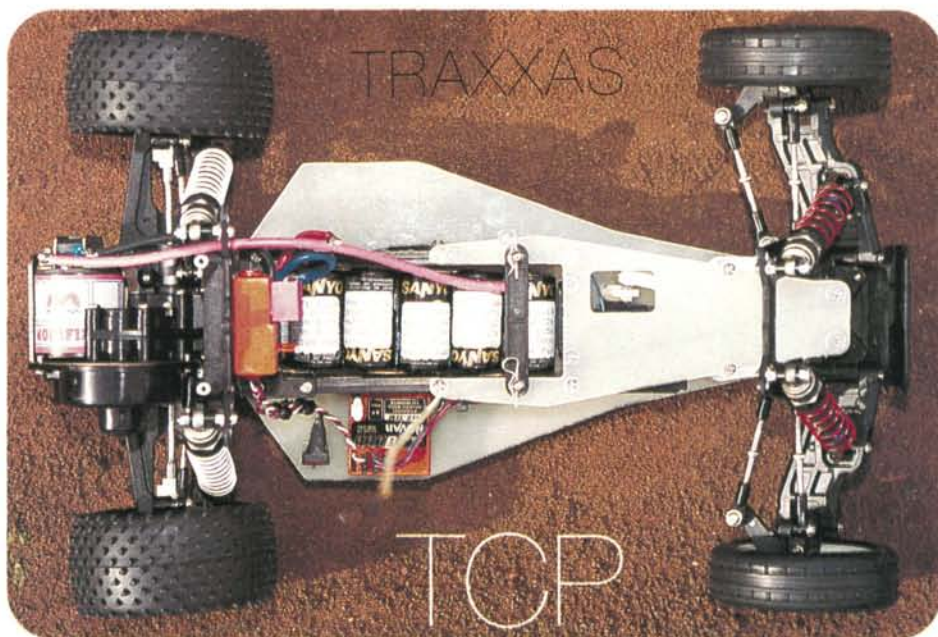
- a double-deck, fiber-resin chassis;
- three pairs of Teflon-coated, hard-anodized Big Bore Shocks in medium, long and extra-long;
- two pairs of long and extra-long composite front-suspension arms; long composite rear suspension arms;
- two sets of drive shafts; a set of nylon splined universal slider shafts; a set of hardened dogbones;
- two styles of steering blocks: 25- and 30-degree caster blocks;
- two pairs of front wheels (2.1 and 2.2 inches) and a pair of 2.2-inch rear wheels;
- four sets of tires; Pro-Trax front and rear tires; and Pro-Line XTR front and rear tires;
- a compact 3-gear transmission with an externally adjustable ball differential and slipper clutch.

- **For more stability:** choose the new,

long front arms, steering blocks and the extra pair of X-Tra-long Big Bore Shocks.

- **For more traction:** swap the tires for the Pro-Line XTR Flat Stubbies.

- **For more top speed:** replace the plastic slider shafts with the hardened-metal universal drive shafts.



- **"No breakage" guarantee.** That's right! If a suspension part breaks during normal use, Traxxas will replace the part free of charge.

- **Other features include:** a full set of ball bearings and a complete set of adjustable turnbuckles.



Schumacher's* new 2WD buggy is loaded with new features that set it apart from other buggies in its class.

- **SACS front suspension.** This is the car's most interesting feature. It allows the caster angle to change throughout the full range of suspension travel. This unique new design is working well on on-road cars, and in this off-road buggy, it's said to increase

stability as well as steering consistency.

- **XPC—Extra Pitch Control chassis.** This moves the weight of the Ni-Cd cells forward to improve balance; its center-line slots take a set of six, side-by-side cells, or a standard stick-type pack. A clear plastic under-tray protects its bottom, and the sides and under-tray are swept up for greater ground clearance during hard cornering.

- **Suspension components** are made of the latest in engineering plastics for less flexing and more control. The long suspension arms allow a lot of wheel movement with improved roll-center control and reduced wheel scrub. Rear-suspension adjustments include anti-squat and toe-in.

- **The transmission** uses 48-pitch gears to transfer power to the ground. The gear-drive system is very efficient and smooth and gives great acceleration off the line. A high-capacity ball diff is sealed for long life and features large-diameter balls for increased performance. Using a wrench, the slipper clutch can easily be set trackside, and the setting can be maintained even when the spur gear is removed. Coaxial drive shafts with sealed telescopic slider action and twin universal joints are smooth and allow free suspension travel.

- **Schumacher's adjustable shocks** feature pistons that can be altered to increase or decrease the damping. The aluminum bodies are precision machined and hard-anodized for smooth performance and durability. Stainless-steel shock shafts and silicone seals further improve the shocks' action. To adjust the spring tension, use the special clips provided.

Better Big Block

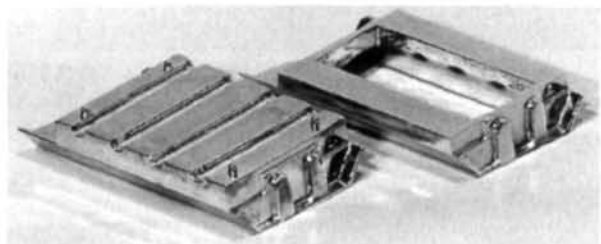
by Mark Strommen

You've all seen the Hemi Coupe and Hemi 'Vette in all kinds of versions. How about Parma's* Hemi engine itself? No one has really detailed it in the most intricate ways. Here are two versions that should catch your eye: pro street and drag.

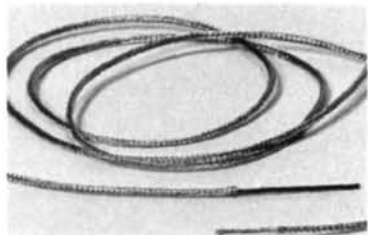
When you get your Hemi engine kit, take all the parts out of the bag and carefully lay them out. Before removing the chrome parts from the trees, spray them with Testors* clear enamel or clear lacquer to give the chrome a deeper, richer look. I prefer to let Chrome-Tech USA* do all my parts—as well as a few extras—over. As you can see, they do an excellent job. (They can also cover parts in gold.) For the plastic parts, choose which ones you want to paint and which ones you want to chrome.

While waiting for the parts to dry, put your block together and paint it (any good modeling cement will work).

1 If you want the heads to look like these, instead of using the water fillers, fill the holes with contour putty. After it has dried, wet-sand with 400-grit sandpaper and then with 600-grit, then paint. When the paint is dry, assemble the heads and manifold on the block.



2 Most Pro Streeters use carburetion on their blowers; that means no fuel-injection lines in the manifold. Next, put the front cover on the two pulleys and fuel pump, assemble the blower and blower pulley and put them on the manifold.

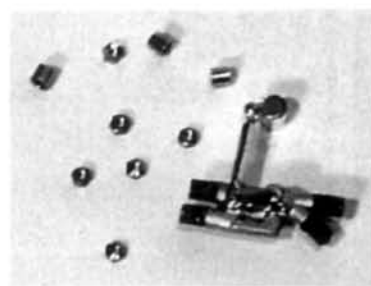


3 When the pulleys are dry enough, put on the blower belt from Parma's wiring kit (no. 10411-A). For the braided water hose, use Parma's braided line from kit no. 10411-A. Find a piece of wire that measures a little more than 1/16 inch in diameter, and put it through the line. For the fuel lines, Trinity* makes some shunt wire that's to scale (part no. 4019). Take a piece of 0.035-inch-diameter wire, and do the same as you did with the water hoses. Now they're ready to be cut into the lengths you need.

4 To make the connectors that go into the end of the hoses and fuel lines, you'll need some K&S* aluminum tube—3/32-inch-diameter for the fuel lines and 1/8-inch-diameter for the water hoses. First, polish the aluminum tube, then cut both sizes into 3/32-inch lengths, with one 1/8-inch piece cut to a 3/8-inch length for the water hose. Do this with an X-Acto knife: using moderate pressure, roll it back and forth on the tube, making a complete circle, then de-burr the ends.

Next, get some tiny nuts for the fuel lines and hoses. (Two different sizes are needed; I bought the hose connecting nuts at a hobby shop and the fuel-line nuts at a JC Penney optical center). Determine which colors you want for the nuts and aluminum pieces, and put them on separate pieces of piano wire. To match the colors used here, select Testors transparent blue and red paints. They'll give you that anodized look. When the paint has dried, glue on the nuts wherever there's a connection to be made. Let it dry, then glue on the coupler. When that's dry, fit your hoses and fuel lines. The only parts to which the connectors should be attached first are the fuel-injection lines and the butterfly linkage. Assemble the rest of the motor according to the directions.

For the fuel block, I used a piece of 3/32-inch square tube. I filled both ends with solder, polished the whole piece and then painted it "blue-anodized." Add your connector and make a bracket to connect the blower.



For the plug wires, use a smaller wire than the ones in Parma's wiring kit. I used train-set wires (about 0.036 inch), which come in red, black, yellow and orange and are perfect for scale size. For boots on the wires, use 1/16-inch-diameter heat-shrink tubing. Don't install the adapter plate for the bell housing; instead, take a piece of 2-inch-wide masking tape (still on the roll) and paint an area that's 1 inch long. Use Pactra's* Outlaw Black, which will not flake when you peel off the tape. When the paint has dried, measure exactly 1 inch, and attach it to the bell housing, making the tape meet the flat part on the bottom of the housing so that it goes only halfway up with the painted side facing out. Set the bell housing down and, using an X-Acto knife, cut around it. This will act as a dust-cover plate (typical of a full-size engine). It will look more realistic when it's connected to the block by itself. Now, put superglue on the upper half of the bell housing and attach it to the block.



5 There are a few ways to customize your engine with drag pipes. Here, the stock ones were used; you can paint them, or have them chromed. Notice how the chrome pipes on the Pro Street are bent so that they come straight out. To bend them, carefully move them back and forth through the flame of a propane torch. When the pipes are hot, slowly bend them. The short drag pipes are from Kyosho's* Big Boss chrome motor. To make them fit Parma's engine, you have to cut off the lip and sand it smooth.

6 If you use these pipes, you'll have to work on the heads as well. Be sure to do this before you glue them to the block. The velocity stacks, Holly carbs and manifold came from a Monogram model no. 2816—a 1/12-scale '69 Camaro street machine.



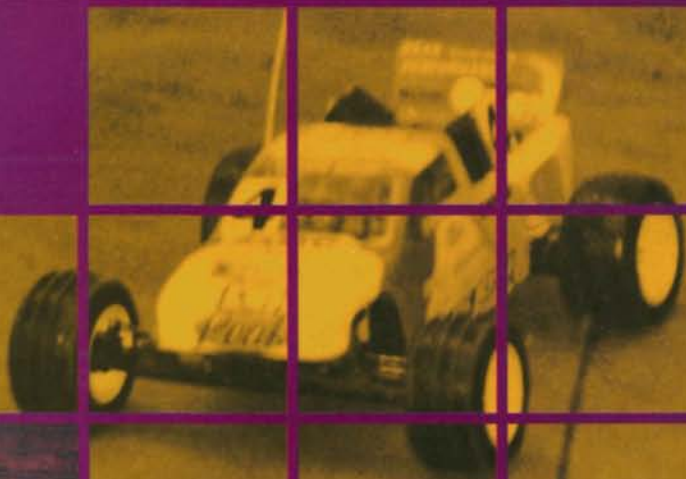
Well, there you have it! With these two engines firmly implanted in any car, I have a couple of showstoppers ready to take on the competition.

*Addresses are listed alphabetically in the Index of Manufacturers on page 200.



Who's the Best Pick-up Pilot?

Kinwald's winning Team Losi Double-XT (Modified class)



Team Losi's Brian Kinwald



Team Associated's Mark Pavlidis



by GEORGE GONZALEZ



the '94 RC

PRESENTED BY TEAM L

A boy, his
bird and
his truck



Pavidis' winning
Associated 10T
(Stock class)



Californians have the same passion for R/C trucks as they do for their full-scale trucks. In short: trucks rule in California! It isn't any wonder, then, that when it came time to choose a location for the 1994 ROAR Truck Nationals, California was the only choice.

The '94 race, which was held from August 11 to 14, was sponsored by Team Losi, Novak and Team Associated, and hosted by So. Cal. R/C Raceway in Garden Grove, CA; more than 200 contestants were present to stake their claim to the national championship.

TRUCKS, TRUCKS AND MORE TRUCKS

The Modified and Stock racing classes fielded the most entrants, but the 15-and-under, 40-and-over and 40-and-over Modified classes had surprisingly good turnouts as well. Ages ranged from 7 to 65, and the skill levels were just as diverse. The pit tables were filled with Associated and Losi products, though I did spot several Traxxas and Schumacher trucks in my travels.

PHOTOS BY GEORGE GONZALEZ

ROAR Truck Nats

SI, NOVAK AND TEAM ASSOCIATED

ROAR TRUCK NATS

40 YEARS AND OVER—STOCK TRUCK

Fin/Qual	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1/1	Gary Kyes	Losi		Trinity	Novak	Airtronics	Losi	Losi
2/2	Doug Brown	Losi	H	Reedy	Novak	Airtronics	Losi	Losi
3/3	Bob Novak	Assoc	A	Sanyo	Novak	Airtronics	Assoc	Pro-Line
4/7	Mich Butts	Losi	N	Perf Match	Novak	Airtronics	Losi	Losi
5/4	Don McMillan	Traxxas	D	Orion	Novak	Futaba	Traxxas	Pro-Line, Losi
6/5	Jim Welsh	Composit Cr	O	Ballistic	Tekin	Airtronics	Pro-Line	Losi, Pro-Line
7/6	Gary Kortz	Losi	U	Orion	Tekin	Futaba	Losi	Losi
8/9	Bob Turrieta	Assoc	T	Sanyo	Tekin	Airtronics	Assoc	Assoc, Pro-Line
9/8	Mike Plant	Assoc		Sanyo	Tekin	Airtronics	Assoc	Pro-Line
10/10	Jane McMillan	Traxxas		Orion	Novak	Futaba	Traxxas	Pro-Line, Losi

15 YEARS AND UNDER—STOCK TRUCK

Fin/Qual	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1/3	Aaron Westin	Losi		World Cl	Tekin	CS2P	Andy's	Losi
2/5	Brian Sipin	Assoc	H	Ballistic	Novak	Futaba	Assoc	Pro-Line
3/2	Jeremy Aymar	Losi	A	SLC	Tekin	Airtronics	Losi	Losi
4/1	Ryan Maifield	Losi	N	Trinity	Novak	Futaba	Losi	Losi
5/8	Erik Steincamp	Losi	D	Ballistic	Novak	Airtronics	Losi	Losi
6/7	Michael Moats	Assoc	O	Reedy	Novak	Airtronics	Assoc	Pro-Line
7/6	Ernie Turrieta	Assoc	U	Reedy	Handout	Airtronics	Losi	Pro-Line
8/4	Robert Carrera	Losi	T	World Cl	Handout	Airtronics	Losi	Losi
9/10	Chad Ambler	Assoc		Reedy	Novak	Airtronics	Assoc	Pro-Line
10/9	Kevin Butts	Losi		Stealth	Novak	Airtronics	Losi	Losi

STOCK TRUCK

Fin/Qual	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1/1	Mark Pavidis	Assoc		Reedy	Novak	Airtronics	Assoc	Pro-Line
2/2	Barry Baker	Assoc	H	Reedy	Novak	Airtronics	Assoc	Pro-Line
3/5	Greg Hodapp	Losi	A	Orion	Novak	Airtronics	Losi	Losi
4/9	Jeremy Kortz	Losi	N	Orion	Novak	JR Propo	Losi	Losi
5/8	Brian Kinwald	Losi	D	Trinity	Novak	Airtronics	Losi	Losi
6/6	Jason Ruona	Assoc	O	Reedy	Novak	Airtronics	Assoc	Pro-Line
7/3	Scott Hughes	Assoc	U	Reedy	Novak	Futaba	Assoc	Pro-Line
8/7	Jack Johnson	Losi	T	Orion	Novak	JR R-756	Losi	Losi
9/10	Rick Howhart	Losi		Orion	Novak	Futaba	Losi	Losi
10/4	Matt Francis	Assoc		Reedy	Novak	Airtronics	Assoc	Pro-Line

40 YEARS AND OVER—MODIFIED TRUCK

Fin/Qual	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1/1	Gary Kyes	Losi	Revolution	Trinity	Novak	Airtronics	Losi	Losi
2/2	Doug Brown	Losi	Reedy	Reedy	Novak	Airtronics	Losi	Losi
3/3	Jim Blauvelt							
4/4	Bob Novak	Assoc		Sanyo	Novak	Airtronics	Assoc	Pro-Line
5/7	Don McMillan	Traxxas	Peak Per	Orion	Novak	Futaba	Traxxas	
6/5	Mich Butts	Losi	Perf W	Perf Match	Novak	Airtronics	Losi	Losi
7/6	Gary Kortz	Losi	Twister	Orion	Tekin	Futaba	Losi	Losi
8/8	Jane McMillan	Traxxas	Peak Per	Orion	Novak	Futaba	Traxxas	Pro-Line, Losi

MODIFIED TRUCK

Fin/Qual	Name	Chassis	Motor	Battery	ESC	Radio	Body	Tires
1/2	Brian Kinwald	Losi	Trinity	Trinity	Novak	Airtronics	Losi	Losi
2/1	Mark Pavidis	Assoc	Reedy	Reedy	Novak	Airtronics	Assoc	Pro-Line
3/5	Jeremy Kortz	Losi	Peak Per	Orion	Novak	JR Propo	Losi	Losi
4/7	Matt Francis	Assoc	Reedy	Reedy	Novak	Airtronics	Assoc	Pro-Line
5/4	Barry Baker	Assoc	Reedy	Reedy	Novak	Airtronics	Assoc	Pro-Line
6/3	Scott Hughes	Assoc	Sonic	Reedy	Novak	Futaba	Assoc	Pro-Line
7/6	Greg Hodapp	Losi	Peak Per	Orion	Novak	Airtronics	Losi	Losi
8/10	Mark Francis	Assoc	Reedy	Reedy	Novak	Airtronics	Assoc	Pro-Line
9/8	Randy Kato	Assoc	Reedy	Reedy	Novak	Airtronics	Assoc	Pro-Line
10/9	Richard Saxton	Assoc	Reedy	Reedy		Airtronics	Assoc	Pro-Line

Assoc: Associated

Overall, the atmosphere was very laid-back—considering several national championships were at stake. All the Qualifiers and Mains went without a glitch, and many of the factory team drivers, such as Brian Kinwald, Mark Pavidis and Rick Hohwart, were available to give advice.

TREACHEROUS TRACK

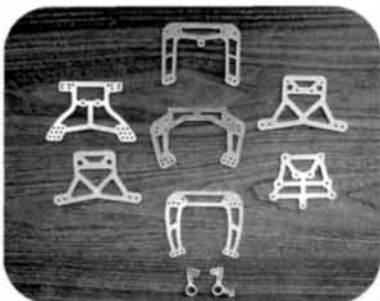
The track was gigantic, and as rough as they come—the perfect terrain for racing trucks. With double and triple jumps at every corner and a massive, shoot-the-moon, table-top jump, these stadium bashers were in the air half of the time. With

four Qualifying rounds and triple A-Mains, plenty of frequent-flier points were chalked up!

A-MAIN ACTION

• **15 and under stock.** After four qualifying rounds, 7-year-old Ryan Maifield

New Stuff at the Nats



• **As/Lite Components.** I met up with Gil Aguilar from As/Lite Components—the company that manufactures aluminum shock towers for Associated and Losi trucks. He told me that the rear shock tower for the RC10T is reinforced at all stress points and is light; it also looks pretty cool when it's polished. The front shock tower is also lightweight and durable.



• **Team Associated.** The factory drivers were testing new graphite front and rear shock towers for the 10T. The front shock tower allows the shocks to be mounted farther out on the A-arms and farther in on the chassis. This gives the truck greater stability coming off the jumps. The rear shock tower allows the shocks to be mounted higher, and it includes shock risers that are attached to the rear A-arms to raise the mount; it improves stability on tracks that have a lot of jumps. These new hop-ups worked well for Mark Pavidis; he TQ'd and won the stock truck national championship.



ended up with the TQ; he completed an amazing 11/4:03.29 in the third round. After the first two A-Mains, however, Ryan fell out of the running. Aaron Westin and Brian Sipin ran exceptionally clean races and ended up tied for first place. In the A3 Main, Jeremy Aymar got the jump-start, while Aaron Westin, Brian Sipin and the rest of the pack followed at a dangerously close pace. At the 2-minute mark, there was one spectacular crash after another; the positions changed so many times that even the announcer got confused. Thank goodness for automated lap counting!

In the end, it was Aaron Westin's LX-T that crossed the line first to take the national championship, while Brian Sipin's RC-10T took second. Jeremy Aymar's LX-T rounded up third and took home a trophy, too.

• **40 and over stock.** Team Losi's designer/engineer, Gary Kyes, took the TQ honors and was the only driver in his class to run 11 perfect laps in all the Qualifiers and Mains. Gary placed first in the A1 and A2 Mains to take the first-place trophy, and then he sat out the A3 to let the other racers compete for second and third without interruption. Gary is a true sportsman.

In the A3 Main, Doug Brown was dominant, while Bob Novak and Jim Welsh battled it out for second. In the end, it was Brown who finished first and took the second-place trophy, while Bob Novak took the third-place trophy after a tie-breaker.

• **40 and over modified.** This class gave Gary Kyes another chance to strut his stuff. Once again, he took the TQ honors and won the first two A-Mains to win the national championship. He then took a DNS in the A3 Main to give the other drivers a little more elbow room. After the dust had cleared, Doug Brown had first-, second- and third-place finishes, to take home the second-place trophy, and Jim Blauvelt took third with his two second-place and one third-place finishes.

• **Stock truck.** This class was, by far, the toughest. Not only did racers have to compete with handout motors, but they also had to compete against drivers such as Brian Kinwald, Mark Pavidis, Jeremy Kortz, Rick Hohwart and Barry Baker. There were three blistering rounds of back-and-forth, bumper-to-tailgate racing, but Mark Pavidis set the pace in the first two Mains.

In the A1 Main, Scott Hughes tailgated Pavidis the whole time, but Pavidis didn't even break a sweat, and never gave up his position. Meanwhile, Barry Baker and Brian Kinwald battled it out for third. At the sound of the buzzer, Pavidis crossed the line first to

post 12/4:01.32; Hughes, who took second with 12/4:02.72, was so close behind Pavidis that it looked as if his truck were in tow. Baker and Kinwald looked as if they crossed the line together, but Baker's transponder crossed the line first to take third.

The A2 Main went pretty much the same, but Jeremy Kortz challenged Pavidis the entire time, while Greg Hodapp and Jason Ruona fought for third. Again, Pavidis crossed the line first, with 12/4:03.03, while Kortz was second with 12/4:04.12; Greg Hodapp crossed the line in third with 12/4:07.61.

Mark Pavidis had already secured the national championship, but he decided to race in the A3 to get some more air time. Barry Baker got the holeshot and never looked back. Greg Hodapp and Jack Johnson followed close behind as they battled it out for second place. There was also a war going on for third, with Jeremy Kortz and Brian Kinwald rubbing fenders the entire way. Meanwhile, Pavidis stayed behind and performed some incredible aerobatics for the spectators.

The outcome: Mark Pavidis took the first-place trophy, Barry Baker took second, and Greg Hodapp collected a trophy for third.

• **Modified truck.** This was the most anticipated event. After the first two Mains, Jeremy Kortz and Brian Kinwald were tied for first. Top qualifier, Mark Pavidis, got off to a good start by taking first in the A1 Main, but his truck broke down in the A2, and he was thrown into fourth place. In the A3 Main, Pavidis shot out into the lead with a vengeance; he needed a first-place finish to win the event. Kinwald was glued to Pavidis, while a turn-1 pileup left the rest of the pack nearly 12 seconds behind. At the 3-minute mark, the spectators were absolutely hysterical, as though they knew that Kinwald would soon go in for the kill. With fewer than 10 seconds left in the race, Pavidis took one corner just wide enough to let Kinwald sneak through to win the national championship. Pavidis had to settle for second, while Kortz took home third.

The folks at So. Cal. R/C Raceway should be commended for running a fine race; the '94 ROAR Truck Nats was probably one of the most exciting races I've covered. The modified truck A3 Main's amazing finishes will definitely find a place in the R/C Hall of Fame, and the turnouts for the 15-and-under and 40-and-over classes were very promising. Congratulations to all the national champions, and to all those who competed! ■

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EVERY YEAR, for the past 10 years, manufacturers, dealers and hobbyists have convened at the Rosemont Convention Center in Chicago, IL, for the RCHTA (Radio Control Hobby Trade Association) show. For years now,

Car Action has made the trip to bring back the hottest scoops on what's new in the industry. At the 1994 show, Chris Chianelli and I saw a ton of hot new products and caught up with a few old friends. Check it out!



RCHTA

Show by JOHN HOWELL



1. Here are your RCHTA tour guides, Chris and Doogie: "Hey, Chris, let me help get that wax out of your ear."



2. Chris, Frank Masi and I take some time out to interview—and get all the hot dirt on—Team Trinity/Team Losi driver Brian Kinwald. Hey, Chris, wake up! Look for the interview on this talented world champ in our next issue.



3. Traci Hohwart (yep, you guessed it, Traci is married to Peak Performance's Rick Hohwart) gives us a quick look at Tamiya's new Motorola/Honda Indycar. The car is based on the F103 chassis platform that's used in the Newman Haas/Texaco Lola Ford Indycar driven by Nigel Mansell and Mario Andretti.



4. Yoshi Dodo, S. Tamiya and Jim Warashina of Tamiya America proudly display their all-new Chevy S-10 stadium truck. Directly behind them is the full-size Nelson and Nelson Chevrolet stadium truck of Mickey Thompson racer Rick Johnson, after which the 1/10-scale Tamiya truck is fashioned.



5 & 6. Check out this cool car! Tom Grogg of Great Planes informed us that this 4WD, 1/8-scale, nitro-powered Esprit car will be available as a complete car and in conversion-kit form for the Inferno off-road buggy. You'll have the option of a few different bodies: an Alfa Romeo sedan body (shown here); a Mercedes touring car body; and, possibly, a Mustang SCCA-type body.

7. Inside the show, a dirt track was set up, and Traxxas donated a few Hawk trucks so that kids could race for a local charity. The kids paid a couple of bucks to race against a few of their buddies, and the money raised was donated to the charity. Kudos to Traxxas and the RCHTA show for providing such a service.

8. Can't get enough muscle cars in your life? Well, then, Bolink has something for you! Steve Rule proudly displays Bolink's new Plymouth Super Bird body. The body received quite a few "look-overs" throughout the show; about as much as this car...

9. ...Also on display at the Bolink booth was this full-size Legend racer. The car is powered by a 1200cc motorcycle engine, and it's raced primarily on paved-oval circuits in the South. The fellows at Bolink told us that the article we ran on their Legend made it so popular that they completely sold out of them, and this car is the only one they have left! They asked us if we wanted to sit in it, but then Chris mentioned something about starting it up and cruising around the

aisles of the show, and....

10. Tatsuro Watanabe, HPI owner and president, lets us check out HPI's all-new on-road racer, the HO1 (no. 0100), which will compete against the likes of Associated's 10L and Trinity's EV10. It has such features as a double-wishbone front suspension with a built-in sway-bar mount and brace mount; a graphite chassis; a unique servo mount; batteries that are in an inboard location (saddle packs are close together); a triple-pivot rear suspension; Super Star road wheels; a new, adjustable swivel body mount; and aluminum hubs.

11. Richard Sorensen of MRC pulled us aside and showed us this new pair of World Scale tires for what we thought was the Baja King. They will, in fact, fit the Baja King, but that's not what they were intended for. Richard pointed out how thick and durable they are, saying that MRC had to make the tire carcass extra tough so that it will be able to handle the power of a .21 gas engine. Now that we have your attention, you're gonna have to stay tuned!

12. C&M had an all-new tire truer on display at the show, and the quick rundown we received was that it's AC-

powered, it cranks in both directions and arbors (shafts) are available for wheels of any size. It comes with a ton of other trick features as well. We'll have to give all you foam-cutters a closer look in a future issue!



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13 and photo above:

Brian Kinwald and Ernie Provetti are pretty pumped about their new car—the Trinity S-Spec 10. It was designed for racers who want to go out and race without spending a ton of money. The car is available in kit form, and it comes with a spec battery and motor combo as well as inexpensive spec foam tires and a NASCAR body.

14. The TRC crew—Tim Morton and David Underwood—show off their new lineup of foam tires for the Kyosho and Tamiya series of F1 cars and Indycars. The donuts come in all popular American and European compounds, and a new direct-replacement wheel is on the way.

15. The Pro-Line booth was voted "Best-looking booth" at the show. Todd Mattson, Pro-Line's president, proudly stands behind the display with his first-place trophy.

16. Yoshio Kondo, director of KO Propo, holds KO's new radio, the Precious. It shares some high-tech features with its brother, the EX-10, such as its ability to store six separate settings in its memory. It also has some great new features, like electronically controlled trim settings.

17. Over at the Horizon booth, we spotted a couple of hot, new, economical chargers. The Mega 1 and Mega 2 chargers feature trickle-charge capabilities, a 15-minute timer, fuse protection and Tamiya-style battery connectors. They can handle 4-, 6- and 7-cell packs. The Mega 2 also has discharge capability and an analog meter to monitor charge and discharge status.

18. The new JR Python AM pistol sport radio features reversing switches for easy setup, trim dials that are easy to reach and adjust, an analog voltage meter and a full 1-year warranty. The radio comes with JR's S10 servos and their reliable NER-102 receiver.

19. One of the more attention-getting booths at this year's show was the Hot Bodies booth. Couldn't tell you why, though.... Anyway, Hot Bodies is relatively new to the industry, and their bodies are already getting a lot of attention.

20. Bill Jeric of Thunder Tiger USA let us check out their new .12 gas engine, the Pro .12BZ. It features an ABC-type piston and sleeve, a dual ball-bearing-supported crankshaft, a twin-needle rotary carb, an air filter and an oversize heat-sink head.

21. Our advertising representatives were cruising the show when they came running back to our booth, saying, "Neil Young's here; we have to get our picture taken with him." From left to right are Jennifer Izzo, Neil Young, Jill Molinaro and Jill Sherter.

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SO

What happened

at the biggest R/C trade show this year!

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HOW TO**Parking Lot Conversion****ATTACK OF THE****KILLER****STREET BUGGIES**

FOR THE SEPTEMBER '94 issue of *Car Action*, I wrote a short article about making the Associated* RC10 Team Car road-worthy by lowering the suspension and changing the spiked tires to on-road Pro-Line* Striker tires. Since then, I've had so much fun with this car that I haven't been able to stop thinking about how to make it handle even better, so it became my winter project.

There were a couple of guidelines I wanted to follow:

- Any parts that had to be made would be made with hand tools.
- I would do the project in stages so that anyone reading this would be able to do the same to their car at their own pace. Each stage is separate and complete.
- I first wanted to make my RC10 Team Car road-worthy so

that I could run it in my driveway in an oval-track setup, where conditions are less than perfect. This type of track demands a lot of acceleration and excellent cornering capabilities. This means the car has to be set up for LTO short-track conditions.

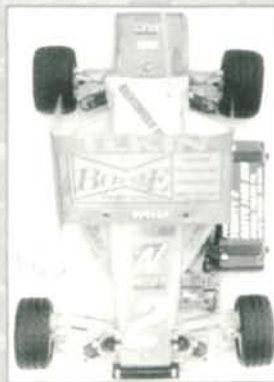
Realizing that I had no experience with on-road suspension setup, I summoned the help of Wayne Therrien of Bowtie Fabricating*. As well as having completely designed his own full-size pro stock, Wayne is also the crew chief for numerous full-size modifieds and pro stocks. I explained to Wayne what I wanted to do and what I had to work with, and he instantly started on the changes I would need to make.

by Brian Leslie**STAGE ONE****LEFT-TURN ONLY**

First and foremost is left-side weight. For LTO racing, 60 percent of the car's total weight should be on the left side. The battery—the heaviest moveable object in the car—is a prime candidate for left-side ballast.

I moved the battery as far left as the aluminum tub chassis would allow. Using the old battery bracket, I put it in the center of the battery pack and remounted it on the chassis.

As you can see from this overhead view, this is no typical RC10. With the weight biased toward the left and a solid differential, the car really cranks to that side—perfect for my driveway oval.

Photos by Brian Leslie

C A S T E R

For the front of the car, Wayne made it very clear that 2 degrees of caster is the best starting point. I removed the aluminum front kick-up plate and put it in a vise. Using the jaws of the vise, I bent it flat and then up slightly to achieve 2 degrees of caster. If necessary, I'll use nylon washers or blocks to change the caster.

STAGE TWO

Experiment with camber adjustments. You'll see that increasing negative or positive camber will noticeably affect handling.



REAR END

Because this car will only be turning left, there's no need for a differential. I removed the balls, inner bearings and rings. I installed plastic spacers in place of the bearings and CA'd the two diff halves together. Stagger will be used to compensate for the corner radius.

I also removed the clutch. I transferred the spur-gear mounting holes to the inner clutch plate and mounted the gear directly on it. This eliminates one clutch plate, spring, bushing, bearing and washer. A nylon spacer fills the hardware void—saving 25 grams of weight and a lot of rotating mass. A general rule of thumb: removing a gram of rotating mass has the same effect as removing 10 grams of non-rotating mass. So removing weight from the transmission and drive train (including wheels and tires) is very beneficial.

STAGE FOUR

STAGE THREE

ANTI-ROLL

Next, I added an anti-roll bar to the front end. I made one out of piano wire; Team Associated makes one, but it's too stiff for this application. An anti-roll bar allows an enormous number of adjustments. Slight changes in its position can mean large changes

on each end where it's mounted on the A-arms. I mounted an aluminum L-bracket on the bottom of the right side lower A-arm. Then I drilled holes in it along the length of the arm. The other side of the anti-roll bar is left loose and tucked under the left A-



Be sure to measure all your adjustments during testing. Check the thickness of the anti-roll bar; it should be half the thickness of your shock spring. In this case, it's exactly 0.043 inch thick.

in the car's handling. The one thing that must be accomplished is that the bar must not, in any way, bind up the suspension. This means that when the car isn't moving, the bar should float freely in its mounts. Also, the bar should have only two bends in it. The distance between these bends is what determines how much tension there is in the bar. The closer they are, the more tension the bar will have, i.e., it's harder to twist it.

The bar must be supported in the center and

arm. I put the right side of the anti-roll bar in the L-bracket and use the various holes to fine-tune it when the anti-roll bar comes in. To hold the center of the anti-roll bar in place, I use 0.125-inch aluminum round stock mounted on the old chassis-tube-brace mounting holes. This is where it's vital that the torsion bar float freely. I started with a 4-inch length of 0.043-inch-diameter music wire with a center length, i.e., distance between the two bends, of 2 inches.

WING DOWN FORCE

This is one thing—and, sometimes, the only thing—that prevents an Indycar from getting intimate with the concrete wall. Short-track racing is no different. Getting from point A to point B as quickly as possible is the goal. Top-end speed isn't the key; acceleration and braking are where it's at. Lots of horsepower with low gearing and serious traction equal acceleration. The horsepower and the gearing are easy; the traction is not.

If you're familiar with short-track racing, you're probably familiar with super-modifieds. These cars have huge aluminum wings that sit on top of them somewhere near the center of the chassis, splitting the wheelbase. The wings are mounted at extreme angles and are unique because they're hinged in front so that the back may be lowered and raised. On the straights, when less downforce is needed, the wing is lowered to reduce drag, and it's raised in the corners where downforce is needed most.

I decided I needed one of these wings. A trip to the hardware store yielded some chimney flashing—a very thin aluminum that's easy to work with but rigid enough to withstand the pressures created by the airflow over it. The easiest way to make the wing's 6x6-inch base is to use a flat piece of flash-

ing. The 3x4-inch side dams are mounted on the base with 2-56 nylon screws.

The Team Car's aluminum chassis has many mounting holes pre-drilled in it. I chose two holes just past the chassis' halfway point, toward the front. I then mounted the nose-brace tube vertical on

the chassis with aluminum ball joints screwed into the sides at the top of the tubes. These holes are already there and tapped for 4-40 screws. I mounted ball cups on the bottom of the wing, snapped the ball into the cup and presto!—instant wing hinge.

The next item needed is a wing damping post, which will support the spring that will determine the rate at which the wing will collapse on the straights. Using 0.125-inch nylon round stock and another aluminum ball joint and cup, I created another hinge.

The ball cup is mounted on the chassis. The aluminum ball is mounted on the side of the nylon rod. I drilled a hole through the bottom of the wing so that the nylon rod can pass through it. A 2.5-inch-long, 0.013-inch-diameter spring is used to control the speed at which the wing will pivot. I adjust the spring by sliding a nylon collar up or down the damping post, thereby collapsing the spring. This adjustment will be very handy when I race on a track of a different size. Ultimately, I'd

like the wing to be fully collapsed by the middle of the straightaway. The collar will allow this.

Because I don't have a wind tunnel at my disposal, choosing the correct spring for the wing was difficult. I started with what I felt was a suitable size; then I put everything together, jumped into my car, rolled down the window and drove down the street holding my R/C car out the window. By varying my speed, I could see when the wing collapsed and came back up. This gave me a good indication of how soft or stiff the spring would have to be. I wanted it to collapse when the car was going at about 15mph, and it didn't. Unfortunately, I already had the softest spring I could find on the post, so instead of trying a different spring, I moved the damping post closer to the front wing hinges. After I had done this, the wing collapsed more readily because of mechanical leverage. With more wing hanging out

over the damping post, the air passing over it will have more leverage. It's just like using a 10-foot-long 2x4 to lift something; it gives you much more leverage than a 2-foot 2x4. Problem solved.

I can now make adjustments endlessly. Other than left-side weight, this wing is the most significant addition to the car. The wing produces excellent downforce when exiting turns, and its side dams increase stability in the middle of them.

The wing adds 40 grams to the car's total weight, but the advantages it offers far outweigh the disadvantages of the additional weight. If you can't put the power to the ground, it doesn't matter how light or how heavy your car is.



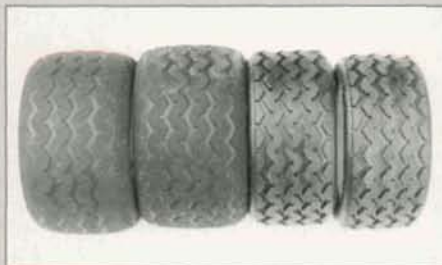
While the car is cornering at low speeds, the wing lifts and provides additional downforce that increases traction.



When the car is on the straightaways, the wing is lowered, and that allows you to achieve higher top speeds.

STAGE
FIVE

TIRES



Pro-Line Striker tires and Pro-Line wheels make a perfect combination for driveway/street poundin'.

Keeping with my original goal of making this a driveway machine, I needed tires that would run on less-than-ideal surfaces. Pro-Line had just what I was looking for. I called Tim Clark, and he set me up with a full set of awesome Striker Series tires and rims. The rears are 2 inches wide, and the fronts are 1¾ inches wide. They really give the car a solid down-to-business look.

It took about 10 laps to wear the tires in, and then they worked really well. They have a tread pattern that cuts through the sand and junk most driveways have. I hardly ever sweep my driveway, so these tires will come in handy. I had run through

several battery packs before I could see any kind of tread wear, but I had fully expected them to be bald by then because they get such great traction.

I also wanted foam tires, so I called Steve Underwood at TRC*. He set me up with a set of green dots and blue dots—very nice-looking tires mounted and trued on Nascar-style rims. With the foam tires I can now change stagger by removing foam from the left rear tire.

STAGE
SIX

STAGGER

To see how stagger works, roll a paper cup on a table, and notice how the top of the cup pivots around the small end. The same thing will happen to a car that has no differential: if the smaller wheel is on the left rear, the car will always try to turn left—even on the straights. On a small track, a car is actually turning for much more of the time than it's going straight, so it's best to make it fast for cornering. Anyway, remove only a $\frac{1}{16}$ -inch sliver of foam at a time—no more than $\frac{1}{2}$ inch total.

I couldn't believe the difference just a little stagger made. Coming into the corner, the car turned effortlessly, and it left the corner just as easily. The foam tires were excellent, although the track had to be swept to make them perform. With a clean track, you can't beat the foam.



Check out the camber on the rear wheels. The wheels lean slightly to the left, so they'll roll flat when entering a left-hand turn and will be more "planted," and the car will be more stable.

STAGE
SEVEN

SPRINGS AND COLLARS

I use black springs on all four corners and shock-collar adjustments, too, if the battery is outside the tub chassis (more on this later). The spaces between the bottoms of the shock caps and the tops of the shock collars are as follows: left front—0.25 inch; left rear—0.125 inch; right front—0.25 inch; right rear—zero. If the battery is in the chassis, try these shock-collar adjustments: use black springs all around: left front, left rear, right front, right rear. These adjustments should get your car in the ballpark. Again, you'll have to modify these settings to suit to your driving style and track conditions.

TESTING 1, 2, 3

I chipped the ice off my driveway and charged up a couple of packs. Right off the bat, I could see that the car had a pretty bad push, meaning it was tight. Remembering what Wayne said about this, I knew I had to take weight off the right front. I removed the torsion bar and tried a few more laps—a definite improvement, but the car still pushed going into the corners.

I lowered the right rear shock collar to put more weight on the left front and right rear and remove weight from the right front. The push wasn't as bad going into a turn, but it really loosened up the rear end when exiting a turn. Although the car isn't perfect, it's much better than it ever was before. Because the weight isn't distributed exactly as it should be, it would be impossible to get this setup tuned perfectly. But, considering that the car wasn't intended for oval racing, it does handle extremely well and is easy to drive. Corrective steering during slides is no problem.

Since I had come this far, I decided to go all the way and try to make the car perfect, if there is such a thing. My next changes will make the car much less forgiving. It will have to handle very well or it will be difficult to drive. (I just wanted to warn you before you decide to go any further....)

BACK TO THE SCALES

First, I had to increase the percentage of weight on the left side and increase the front-to-rear weight ratio. To do this, I had to take the battery out of the tub chassis and put it just behind the left front wheel. I used a piece of 0.0625-inch-thick aluminum mounted on the chassis along with two battery cups as a battery support. I also moved the speed control up front to the right of the battery pack. After putting everything back together and removing the torsion bar, I put the car back on the scales—a major improvement in the numbers. This time, my calculations yielded a 57.6 percent left side and 43 percent to 57 percent front-to-rear ratio. I adjusted the wedge to 56.6 percent.

TESTING 4-5-6

I have no problem getting the car to turn now; as a matter of fact, with a stock motor, it's almost boring—nearly flawless. It handles so well and gets such great trac-



Measure everything before you alter any setup. Then, if you head in the wrong direction, you'll always have a benchmark to refer back to.

tion out of the turns that it actually drags the motor down. If I gear any lower, I lose all the top end. To remedy this, I went back to see Wayne, who didn't seem surprised. He said that the car's great traction is bogging down the motor; he suggested that I install a stiffer left rear spring and then weigh the car to get the wheel weights the same as before. The stiffest spring in the car attracts the weight. When the car exits a turn under power, the left rear will now pick up more weight than before, so the right rear will have less. This setup will allow the motor to pick up more rpm faster, so the car will be quicker out of corners.

MORE POWER

It was time for more power. I chose a Trinity* Ruby 16-turn triple Gem Series motor with a 19-tooth Robinson* aluminum pinion. The Ruby is an excellent machine-wound modified featuring 5.0 wet magnets, dual ball bearings and adjustable timing—all at a fraction of the cost of most modified motors with the same features. The Ruby did the trick; it gave the acceleration I was looking for, but the car was still controllable—an excellent combination.

FINAL NOTE

Many things have made this car fun.

- The RC10 is well-proven. Parts are readily available and not expensive.
- Rugged, rugged and rugged. For driveway racing, you need something that will withstand abuse—landscape timbers and slam-jam basketball poles.
- It can be converted back to off-road at any time at no cost.
- The number of possible adjustments is vast—far greater than on any on-road pan car. The car acts exactly like a full-size car.
- This car can be driven in a space as small as 25x15 feet.
- It's fun! I don't even use my on-road car any more. This car looks mean, handles well and is a ball to drive.

*Addresses are listed alphabetically in the Index of Manufacturers on page 200.

TECH HEAD

by Frank Masi

Why do I need stiff suspension?

Why does everyone brag about how stiff their car's suspension is? Losi does; so do Associated, Traxxas and Schumacher. They know why rigid suspension components are important; but do you? There are two reasons:

- First, stiffer suspension flexes less when operating, so suspension geometry, i.e., the arrangement and relationship between the suspension pieces and the chassis, remains more consistent.
- Second, rigid suspension components store less energy, and this is what I want to talk about this month.

As your car travels over a surface, many things happen that aren't apparent to the naked eye. If you were to watch a videotape of an R/C buggy in slow motion, you'd be shocked to see just how much work its suspension does—and how much it flexes!

Hold a shock tower in your hand and flex it. (Not that far! You don't want to break it.) When you release the pressure, notice that the tower wants to return to its original shape. The shock tower used the energy that you applied to bend it to return

to its original form; it stored the energy, then released it. Now imagine that the same shock tower is mounted on your R/C buggy. When the car hits a bump, the shock tower will flex a bit as the shock is compressed. Once the pressure from the shock subsides, the tower will return the energy back to the shock, which could push the suspension arm down.

Although you can't see this happening while you drive your car, you have seen the effects of stored energy: an unexpected hop over a rutty section, or a sudden, inexplicable loss of traction. The more rigid the suspension, the less the car's handling is likely to be affected by stored energy.

If less energy is absorbed by the shock tower, chassis and other suspension pieces, where is the energy going? You should know that the amount of energy that must be absorbed by the entire car is constant, regardless of whether or not its suspension flexes. Where the energy goes is what's important to handling. If less energy gets absorbed by the suspension and chassis, more will be absorbed by...the shocks!

That's right; the shocks will be able to do their job more effectively, with less "feedback" from the suspension.

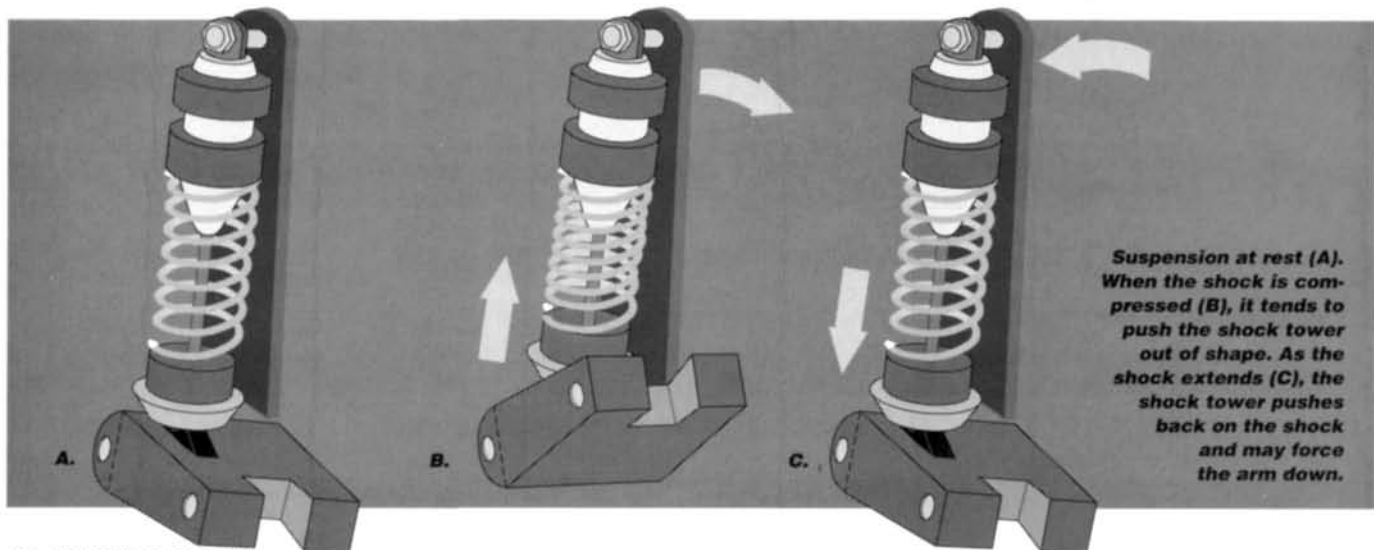
The concept of stored energy applies not only to shock towers, but also to all of the parts of the suspension, including the car's chassis. Keep in mind, however, that when designing suspension parts,

manufacturers must make compromises between stiffness and durability, i.e., the part's ability

to absorb shock without breaking. For this reason, companies like Team Losi offer stiffer suspension pieces as after-market options for their cars and trucks. Less experienced drivers are more likely to break their suspensions than are expert drivers, so novices might not yet be ready for these optional pieces. ■



Some companies, such as Team Losi, offer after-market graphite suspension parts that are more rigid than the standard components.



Suspension at rest (A). When the shock is compressed (B), it tends to push the shock tower out of shape. As the shock extends (C), the shock tower pushes back on the shock and may force the arm down.

From the track to the parking lot.
This is the R/C action as **you** see it.

by Chris Chianelli

Grassroots

RACING

Hope you liked last month's first edition of Grassroots and feel it will be a useful section in the mag.

I can only reiterate in this, the second edition, that these are *your* pages. They belong to you—the R/C car enthusiast, who loves to compete with his friends and family in evenly matched CCR (Cost Controlled Racing) events; you're the grassroots racer.

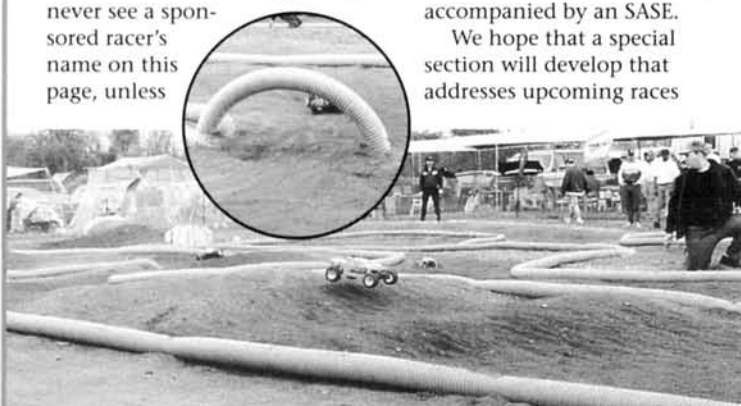
As I said last month, you will never see a sponsored racer's name on this page, unless

it's how a local hero kicked his butt. We at *Car Action* want to see what's going on and how you're organizing races at your local track, hobby shop and parking-lot. Please write in and let me know your opinions. Send in the photos—snapshots, 35mm slides, Polaroids, anything. Keep in mind that we can't print everything and that photos cannot be returned unless accompanied by an SASE.

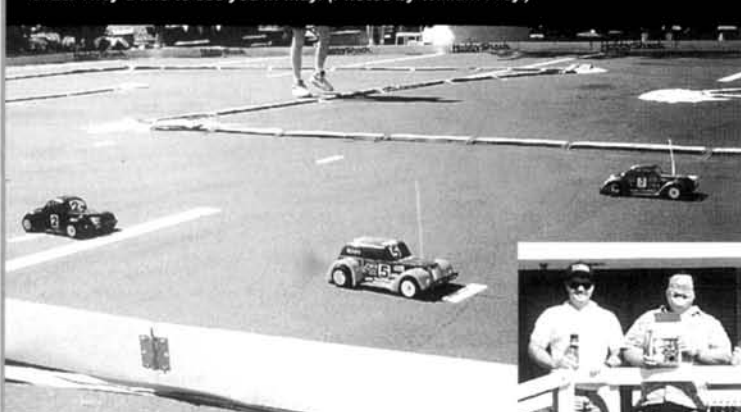
We hope that a special section will develop that addresses upcoming races

and, in a subsequent issue, features the local hot "trigger-fingers" who won those races.

Remember, big sponsors are always watching.



Above: in Litchfield, IL—one of five sites for the Michigan Auto Racing Series (MARS)—a modified truck attempts the doubles. Above: what's this?—R/C croquet? No, it's the last turn before the start/finish line at the Litchfield track. If two cars try it together, one or both won't make it. Try your luck. For information on the '95 Series, contact Bruce Tremayne at (616) 530-8663, or Ken Hamilton at (517) 542-3128. They'd like to see you in May. (Photos by William Frey.)



Right: October 8—Riverside, CA. Attendance is up at Hobby Shack's Parking-Lot Series. Hundreds of cars have been sold, and lots of kids are getting back into R/C racing again. And, many new faces are on the scene—great father/son/daughter participation! Above: Bolink's Legend class—a super success at the Hobby Shack event.

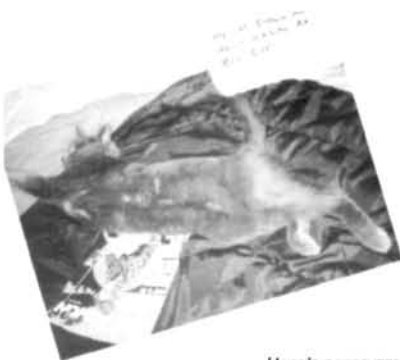


Top and above: the Florida State Series, which is held at different cities in the state, has added three new classes to its existing 1/12- and 1/10-scale, on-road classes: a flat oval class, the new Bolink Legend class and a Formula 1 class. For more information, contact Bob Hall, Florida's State Series director, at (813) 968-5529, or Ken Holmes, assistant director, at (813) 585-2381. (Photos by Bill Fraden of Jacksonville, FL.)



R/C Rapido en Bogota

Here's a look at some parking-lot racing Colombian-style. Left: Nissan King Cab Stock Truck Novice class; below left: get this—it's a Tamiya Midnight Pumpkin class for expert drivers. For more information, contact Jorge Delgado at the Club de Automodelismo Colombiano, Centro Comercial Guayamaral, Kilometro 16 Autopista Norte Santa Fe de Bogota, D.C. Colombia; phone: 1-6130588.



Here's some grassroots ingenuity. To make his very own 175-foot tri-oval, Steve Roach of Fort Wayne, IN, cut that grass right down to its roots! The high-tension tower serves as a turn pylon—the non-transportable type.



INDUSTRY SUPPORTS PLR

Pictured here with Tamiya America President, Mark Tamiya, is the new Tamiya Championship Racing (TCR) Dealer Program. This package supplies everything that dealers need to start and manage successful racing programs. Part 1 of the program includes a free copy of an action-packed video designed as in-store promotion to spark off-the-street customer interest. It comes in a continuous-loop format. Part 2 is a \$25 starter pack that contains a comprehensive dealer racing manual, a sample corner marker, a full-color poster, a TCR official cap and T-shirt, a race banner and in-store and trackside promotional materials. The in-depth manual is a step-by-step guide that addresses all aspects of successful R/C race management. It covers everything from inexpensive track setup, class rules, sample track layouts and setting up a frequency management chart to a step-by-step way to count laps without a computer. Dealers who want a free video or the entire Tamiya Championship Racing package should call 1-800-TAMIYA.



Bolink now offers promo and awards packages to R/C tracks and dealers who are interested in Legend racing. The free promo packages consist of material to help promote Legend racing at your track, and they include two "Legend Racing Here" posters (with a space to post race dates), two sets of Legend race rules and handout literature that promotes the Legend cars (with a place to stamp your shop/track name).

The awards package (only \$10.95) includes 18 screened metal toolbox plaques (2x3 1/2 inches) for the weekly first-,

second- and third-place Main winners plus three custom-screened 5x7-inch wall plaques for the first-, second- and third-place Series winners. Bolink will require the use of its Legend race rules and, most likely, a six-race format with each contestant's four best finishes counting toward the Series championship. Races are not required to be run on a permanent track. R/C Legend Series races can be run as parking-lot events. Contact Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245; (404) 963-0252; fax (404) 963-7334.

Call Now!

If you're a dealer or just a bunch of fun-lovers in search of a race program, call now! Here's a few hot-line phone numbers that you can use if you have any questions, or if you'd like to start a program in your area.

Bolink Legend Series
(404) 963-0252

Tamiya R/C Championship Series
(800) TAMIYA-A

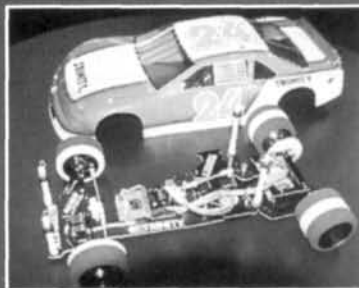
Kyosho R/C Sport Racing
(800) 682-8948, ext. 085F

Hobby Shack Parking Lot
(714) 964-8846

Hobby Town USA Parking Lot
(402) 434-5050

Trinity's Street SPEC Series
T.B.A.

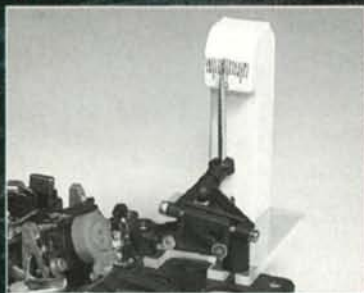
Though Trinity's Street Spec rules are still in the final stages of formulation, I can provide the basic concept. Street Spec is the R/C car world's NASCAR, CART and Trans Am, where rules are carefully structured to keep the racing evenly matched. The Street Spec program is designed to offer a low-dollar alternative to the high-tech, on-road series that's currently available. According to Trinity, Street Spec is the answer, whether you're a fun-seeking newcomer, or an R/C veteran who has none of the latest expensive gizmos and who wants to test his/her skills on an evenly matched field. An interesting note: other manufacturers will be allowed to produce equipment for this series, but it must be submitted to Trinity for a Street Spec legalization, 30-day-approval period. Stay tuned; we'll have much more to say about this program in coming issues.



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Bennett Equipment, 900 E. 1300 South, Romney, IN 47981-9619; (317) 448-5881.

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245; (404) 963-0252.

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Novak Electronics Inc., 18910 Teller Ave., Irvine, CA 92715; (714) 833-8873.

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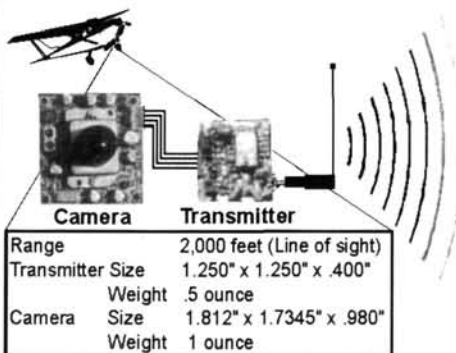
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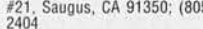
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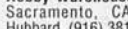
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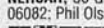
CT R/C Off-Roaders, behind Old Field School, Fairfield, CT 06430; Mike Belmonte, (203) 661-0145



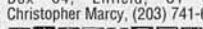
K/N R/C Speedway Inc., West St., Stafford Springs, CT 06076; (203) 684-9896



NERCAR, 36 Glendale Rd., Enfield, CT 06082; Phil Olsson, (203) 627-5410



R/C Madness, 640 Enfield St., P.O. Box 64, Enfield, CT 06082; Christopher Marcy, (203) 741-6501



DELAWARE

4E Hobbies, 1138 West Dupont Hwy., Millsboro, DE 19966; Peggy Evans, (302) 934-1708



FLORIDA

B+T R/C Central, 811 Playground Rd., Ft. Walton Beach, FL 32547; (904) 863-1666



Brantford R/C Speedway, Rt. 3, Box 240, Brantford, FL 32008; (904) 935-0758



Broward County R/C Race Club, Mills Pond Park, Ft. Lauderdale, FL; Ed Augusto (305) 525-3304



Challenger Speedway at the Willows, Willows Park & Okeechobee Blvd., Royal Palm Beach, FL 33414; Walt, (407) 965-2790 or Mark, (407) 790-6917



Coral Springs Roadrunners, P.O. Box 9632, Coral Springs, FL 33075; Randy Witte, (305) 474-5934 or Rick Schwartz, (305) 344-1983



First Coast Speedway, 6410 Waltho Dr., Jacksonville, FL 32211; Bob Thompson, (904) 743-2161



Greater Orlando Auto Racers, 970 Keller Rd., Altamonte Springs, FL 32714; Dave Mottin, (407) 263-4819



Hobby World Raceway, 7273 103rd St., Jacksonville, FL; Ray or Greg, (904) 772-9022



Lake Whippoorwill International Speedway, 12345 Narcoossee Rd., Orlando, FL 32827; Bob Hosch, (407) 277-9586; fax (407) 277-2568



Louie Burton's R/C Raceway, 4215 Mustang Rd., Lakeland, FL 33803; Louie Burton, (813) 665-1322



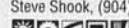
My Rose, 1695 W. Indiantown Rd., Jupiter, FL 33458; Mark Watson, (407) 744-3800



NORRA, 3300 Santa Barbara Blvd., Naples, FL 33942; Jerry Pecar, (813) 592-7562 or Mark Benfield, (813) 263-6861



Ocala Radio Control Car Club, 3500 SE 30th Terrace, Ocala, FL 34471; Steve Shook, (904) 694-5147



Paul's Stadium Raceway, 4511 W. Dr. M.L. King Jr. Blvd., Jupiter, FL 33458; Paul Surette, (813) 872-8662



PBG R/C Motor Park, 6351 Barbara St., Palm Beach Gardens, FL 33410; Doug Gleason, (407) 743-9791



Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 32712; (407) 886-4615



Red's R/C Raceway & Hobbies, Etc.
1010 Creighton Rd., Pensacola, FL
32504; Linda Till, (904) 479-2330



River City R/C Car Club, 9711 Sharing
Cross Dr., Jacksonville, FL 32257; Bill
Fraden, (904) 268-1948



Southwest Florida R/C Raceway,
2425 Rivers Rd., Naples, FL 33964;
Clyde Armstrong, (813) 455-1143



Three Flags R/C Racetrack, 1755
East S.R. 44, Wildwood, FL 34785;
Don Meares Sr., (904) 748-3870; fax
(904) 748-5263



Treasure Coast R/C Club, 4931
Oleander, Fort Pierce, FL 34982; Lou,
(407) 464-3207



West Coast R/C Club, Lake Park,
17203 N. Dale Mabry, Tampa, FL
33549; Alex, (813) 920-7448; Bert,
(813) 654-2554



GEORGIA

Carnesville R/C Speedway, Hwy. 145
S., Carnesville, GA 30521; Bill or
Georgia Austin, (706) 335-9044 or
335-3381



Chafee Park Raceway, 1800 Pearl
Ave., Augusta, GA 30904; Darren
Brooks, (706) 738-8929



Dallon Raceway, 2300 Chattahoochee
Rd., Dalton, GA 30720; (404) 226-
6699



Echeconnee Superspeedway, 2149
Richardson Dr., Macon, GA 31206;
Andy Thompson/Cliff Kline, (912) 788-
8731



Lake Mayer Raceway, 1430 Dale Dr.,
Savannah, GA 31406; Pat Rossiter,
(912) 354-0098



PDQ Raceway & Hobbies, 341 Senoia
Rd., Peachtree City, GA 30269;
Richard Burdett, (404) 631-1788



KEY TO SYMBOLS

- Indoor
- Outdoor
- Off-road
- Oval
- Dirt oval
- Carpet
- Concrete
- Asphalt
- On-site hobby shop
- AC power
- Auto lap-counting
- Food available

The Racer's Edge, 1530 Hwy. 19 N.,
Thomaston, GA 30286; Roger or Mark
Walls, (706) 648-2637, (706) 648-
6534



Sandy Cross Speedway, Rt. 1, Box
1073, Royston, GA 30662; Morris
Phillips or Wayne Fowler, (404) 245-
9573



Silver Wings Raceway, 5611
Riverdale Rd., College Park, GA
30349; (404) 991-2225



Sugar Bowl R/C Speedway, 5272
North Ave., Sugar Hill, GA 30518;
Shelley or Jan Bailey, (404) 945-6709



IDAHO

Capital Dirt Burners, 1945 N. Teare
Ave., Meridian, ID 83642; Jim
Brandon, (208) 888-7079



Falls Hobbies & R/C Raceway, 1515
Northgate Mile, Idaho Falls, ID 83401;
(208) 529-8550



ILLINOIS

AJ's Raceway, Kesslinger Road,
Dekalb, IL 60115; A.J. Schultz, (815)
756-2772



BARR, 809 River Dr., Elgin, IL 60120;
Jim Haynes, (815) 234-5615



C&R Hobbies, 39 E. Jones, Milford, IL
60953; Ray Craighead, (815) 889-
4073



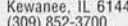
Cedarville R/C Speedway, 430 W.
Washington, Cedarville, IL 61013;
Troy Pokoj, (815) 745-2885



Centennial Park/LeMont Dirt
Burners, 7827 Rohrer Dr., Downers
Grove, IL 60516; Scott Moravik, (708)
968-6411



Diehard R/C Raceway, 300 N. Main,
Kewanee, IL 61443; Dick Jennings,
(309) 852-3700



Hobby Town Raceway, 4611 W. Rt.
120, McHenry, IL 60050; Mike
Hollingsworth (815) 344-1777



Leisure Hours R/C Raceway, 24121
W. Theodore, Bldg. 1, Plainfield, IL
60435; Scott Hill, (815) 439-1777
(track), (815) 439-1477 (shop)



Machesney Park, 1220 Shappert Dr.,
Machesney Park, IL 61115; (815) 282-
1311



Marty's R/C Hobby, 1335 E.
Broadway, Bradley, IL 60915; Gail or
Marty, (815) 933-8441



Monee R/C Raceway, 26049
Ridgeland Ave., Monee, IL 60449; Roy
or Roberta Moody, (708) 534-2422
(track), (708) 799-5597



Peoria R/C Raceway, 518 Hillsdale
Ave., Peoria, IL 61604; Ray Tigue,
(309) 672-1780



Radio-Active Raceway, 751 N.
Bolingbrook Dr., #15, Bolingbrook, IL
60440; Jim, (708) 759-7557



Redline Raceway, 921 Harding,
Calumet City, IL 60409; (708) 862-
8181



Shiloh Eagles Superspeedway, 308
N. Virginia Ave., Belleville, IL 62220;
(618) 277-6030



SIRCAR Raceway, 1200 N. Marion,
Carbondale, IL 62901; (618) 549-5895



Slot and Wing Hobbies "Race
Place", 1615 W. Springfield,
Champaign, IL 61821; (217) 359-1920



Superior Raceway, 1706 W. Bradley,
Champaign, IL 61821; (217) 359-8073



INDIANA

Autograph/Race World, 231
Pendleton Ave., Pendleton, IN 46064;
Sam Mudd, (317) 778-3386



Blaze'n Race'n, P.O. Box 6, Hamlet,
IN 46532; James Berndt, (219) 867-
1324



Elliott's R/C Raceway, 2140 North
Plate, Kokomo, IN 46901; (317) 452-
0163



Hobby Barn Raceway, 1950
Springhill, Terre Haute, IN 47802-
9694; (812) 299-5773



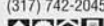
K&L Hobbies & Raceway, 3275 North
525W, LaPorte, IN 46350; (219) 324-
0353



Kokomo Hobby & Radio Raceway,
1108 E. Markland, Kokomo, IN 46901;
(317) 457-5060



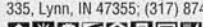
Main Hobbies, 625 Columbia,
Lafayette, IN 47901; Randy Palmer,
(317) 742-2045



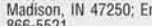
P&T Hobbies and Raceway, RR 2
(Hwy. 60), Mitchell, IN 47446; Paul
Weber or Tom Logsdon, (812) 849-
6666, fax (812) 332-0018



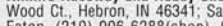
R/C World of Indiana, RR #2, Box
335, Lynn, IN 47355; (317) 874-2464



Racer's Choice Raceway, State Rd.
256, Jefferson Co. 4-H Fairgrounds,
Madison, IN 47250; Eric Burns, (812)
866-5521



Rimfire Raceway and Hobby Shop, 8
Wood Ct., Hebron, IN 46341; Sandra
Eaton, (219) 996-6288(shop), 987-
2803(home)



The Rink, 7900 Whitcomb,
Merrillville, IN 46410; Don Reiner,
(219) 769-8113



Dubuque R/C Speedway, Dubuque
County Fairgrounds, Dubuque, IA
52001; Paul Conlon, (319) 556-2736



IOWA

M&M Racetrack, 2434 Pilgrim Path,
Oskaloosa, IA 52577; (515) 673-6265



Radio Control Raceway Park, 746
South 30th St., Fort Dodge, IA 50501;
Bernie Halverson, (515) 576-3780



Sibley Raceway, Osceola County
Fairgrounds, Sibley, IA 51249; Allen
Reck, (712) 754-2604



Southwest Iowa Hobbies 'n' R/C
Raceway, 204 S. Broadway, Red Oak,
IA 51566; Debbie Johnson, (712) 623-
5513



KANSAS

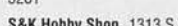
M&M R/C Superspeedway, 2400
Broadway, Parsons, KS 67357; Mark
Brown, (316) 421-6742



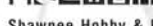
R/C World Raceway, 217 Brownie
Ave., Scranton, KS 66537; Corky or
Pam Green, (913) 793-2313



RCRC Raceway, 507 N. 4th, Atwood,
KS 67730; Bob Dunker, (913) 626-
3261



S&K Hobby Shop, 1313 S.W. 21st St.,
Topeka, KS 66604; Joe Knernschield,
(913) 357-0104



Shawnee Hobby & R/C Raceway,
4603 Shawnee Dr., Kansas City, KS
66106; Bill Pugh, (913) 384-3211



KENTUCKY

Bluegrass Int'l/Perry's R/C Hobbies,
214 Globe St., Radcliff, KY 40160;
William Perry, (502) 351-RACE



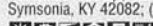
Checkered Flag Raceway, 1790
Bryan Station Rd., Lexington, KY
40505; Billy or Jay, (606) 293-6825



ProTrak R/C Racing, 3451 Cane Run
Rd., Louisville, KY 40211; Tony
Hardin, (502) 778-2657



West Kentucky R/C Hobbies, 45
Hawkins Loop, P.O. Box 21,
Symsonia, KY 42082; (502) 851-3534

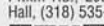


LOUISIANA

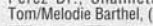
Cajun R/C Raceway, Rt. 2, Box 288
(Hwy. 343, Bosco) Church Point, LA
70525; Ray Thibodeaux, (318) 873-
3855



Red Dirt Raceway & Hobbies, 324
Pitkin Rd., Leesville, LA 71446; C.J.
Hall, (318) 535-9238

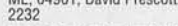


T&M Pro Hobbies, 9212 W. Judge
Perez Dr., Chalmette, LA 70043;
Tom/Melodie Barthel, (504) 271-3111



MAINE

Central Maine R/C Speedway and
Hobbies, 18 Lithgow St., Winslow,
ME, 04901; David Prescott, (207) 877-
2232



Clay Bowl R/C Hobbies, P.O. Box 61,
Greene, ME 04236; Pat Cap, (207)
946-5003



Mementos Hobby Shop, 86 Sweden
St., Caribou, ME 04736; (207) 498-
3711

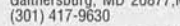


MARYLAND

Cockeysville Astrodom Racers,
10854 York Rd. (rear), Cockeysville,
MD 21030; Steve Balaz, (410) 666-
2521



The Track, 16806 Oakmont Ave.,
Gaithersburg, MD 20877; Mimi Wong,
(301) 417-9630



Wolland Hobbies and Raceway,
2072 Crain Hwy., Waldorf, MD 20601;
Perry Pritchard, (301) 870-0293



Centerline Hobbies, 1

Track Directory

Scale Racing Center, 3700 1/2 Elizabeth Lake Rd., Waterford, MI 48328; Larry Rossi, (810) 683-5529



T/A Raceway, 119 N. Michigan, Big Rapids, MI 49307; Harvey, (616) 796-3217



Village Hobbies-n-Crafts, 195 N. Elm, Hesperia, MI 49421; Alan or Fran, (616) 854-1374



Westside R/C Raceway, 4335 Lake Michigan Dr., Grand Rapids, MI 49504; George Onikowski, (616) 791-9902. (Open May through August)



MINNESOTA

Badger Racing Association, 404 Tamarack St., Box 101, Badger, MN 56714; Kevin, (218) 528-3352; Keith (218) 386-2001



C/S Speedway, 312 N. Bdwy, Crookston, MN 56716; Caesar Kaiser, (218) 281-6665



Greater Minnesota Racin' Place, 3302 Southway Dr., St. Cloud, MN 56301; Jon Jackson, (612) 252-9768



Larry's Raceway Park, 105 3rd Ave. NE, Glenwood, MN 56334; Dan Winter, (612) 634-5246



Minn-E-Golf & Hobby, 9100 Park Ave., Elk River, MN 55330; (612) 441-8365



Paul Bunyan Raceway, Rte. 1, Box 468, Bemidji, MN 56664; Brad Trask, (218) 243-2749



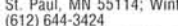
Range Racing World R/C Speedway, 412 Jones St., Eveleth, MN 55734; Bill, (218) 744-4423



Southside Speedway, 2241 Marion Rd. SE, Rochester, MN 55904; Kevin Guy, (507) 281-3233



Trackside Racing, 2300 Myrtle Ave., St. Paul, MN 55114; Winton Otfelle, (612) 644-3424



Wild West R/C Speedway, 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248



MISSISSIPPI

Crossroads Raceway, 904 Cass St., Corinth, MS 38838; Ronnie Inman, (601) 287-7169



Fast Freddy's Raceway, 20390 Hwy. 49, Saucier, MS 39574; Mark Payne, (601) 832-0315



Joe McFaden Hobbies, 1619 51st Ave., Meridian, MS 39307; Joe McFaden, (601) 483-7000



Rural Hill Raceway, 2535 Tabernacle Rd., Columbus, MS 39702; Jeffrey Alvey, (601) 328-9429



Small Cars Unlimited, 820 Cooper Rd., Jackson, MS 39212; (601) 372-FAST



MISSOURI

All Seasons Hobby, 152 O'Fallon Plaza, O'Fallon, MO 63366; Bob Daniels, (314) 281-8767



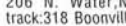
ARC Raceway, 109 South High St., Jackson, MO 63755; Burt, (314) 243-1371



Blue Vue Speedway, 12019 E. 47th St., Kansas City, MO 64133; Mark Randol, (816) 358-0238



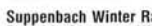
Fast Trax Racing Assoc., mailing: 206 N. Water, Nixa, MO 65714; track: 318 Boonville, Springfield, MO 65082; Juan Montell, (417) 725-4337



Lafayette Riverside Raceway, P.O. Box 9663, Marshall Rd., Kirkwood, MO 63122; Don Laningham, (314) 966-8912



Suppenbach Winter Racing, Route 5, Box 66, Pleasant Hill, MO 64080; Larry Suppenbach, (816) 987-5828



MONTANA

Bozeman R/C Powerhouse Track, 2825 W. Main (west side of Main Mall), Bozeman, MT 59715; (406) 586-0071



NEBRASKA

Mr. Bill's, 450 West 2nd St., Hastings, NE 68901; Bill J. Ries, (402) 462-4865



The Salvation Army, 4032 Harrison St., Omaha, NE 68147-1012; Lt. Michael Delashmit, (402) 634-3414



NEVADA

Radio Controlled Race World, 905 So. Rock Blvd., Sparks, NV 89431; James or Barbara Balough, (702) 356-2882



R/C Fever, 3580 Polaris, Suite 2, Las Vegas, NV 89103; Jim or Darin, (702) 367-RACE



Silverbowl Speedway, 7274 Hardtack Cir., Las Vegas, NV 89119; Mike, (702) 896-3577

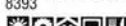


NEW HAMPSHIRE

Economy R/C Speedway, 4 Maple St., Winchester, NH 03470; Harold Thomas, (603) 239-4482 or 239-6470



Fastracker Club, 520 Washington St., Keene, NH 03431; Bill Phillips or John O'Connor, (603) 352-0811 or 357-8393



Hobby Etc., Heritage Place, Rt. 101A, Amherst, NH 03031; (603) 595-8549



Lake Region R/C Speedway, Lily Pond Rd., Lacombe, NH 03246; Louie Blais, (603) 524-2909



Robert's Railroad & Hobbies, Box 431, Rt. 4 at Rt. 152, Northwood, NH 03261; Robert Jeffers, (603) 942-5193

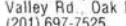


NEW JERSEY

American Raceway, 142 Wilson Ave., Englishtown, NJ 07726; Larry Wedemeyer, (908) 446-2010



Jefferson Speedway, 5494 Berkshire Valley Rd., Oak Ridge, NJ 07438; (201) 697-7525



LBRA Track, 392 Warburton Pl., Long Branch, NJ 07740; (908) 222-5122



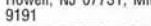
Pit Stop Dragway, Campus Rd., Totowa, NJ 07512; Kimberly Frank, (201) 956-RACE (7223)



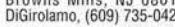
The Race Place, 1151 Hwy. 33, Farmingdale, NJ 07731; John Fary, (908) 938-5215



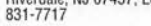
Spernell Speedway, 2301 Rte. 9 North, Great American Flea Market, Howell, NJ 07731; Mitch, (908) 577-9191



On Trax Hobbies, 1549 Rte. 70, Browns Mills, NJ 08015; Joseph DiGirolamo, (609) 735-0422



Zeppelin Hobbies, 92 Rt. 23N, Riverdale, NJ 07457; Lou Ballini, (201) 831-7717

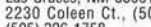


NEW MEXICO

Las Cruces R/C, 3110 Hillsdale, Las Cruces, NM 88005; Bob Risner, (505) 523-1962



Meerscheidt R/C Raceway Park, Walnut and Hadley, Meerscheidt Park, Las Cruces, NM 88001; Wayne Ward, 2230 Coleen Ct., (505) 523-4863, (505) 326-1758



NEW YORK

A&D's FastTracks, 1000 N. Main St., Brewster, NY 10509; (914) 279-2065



Beach Hill Speedway, 1760 Beach Hill Rd., Watkins Glen, NY 14891; Jim Riley, (607) 535-2616



Brockport Speedway, 6000 Sweden Walker Rd., Brockport, NY 14420; Gil & Betty Glidden, (716) 637-6224



Brownie's Pro & Sport Hobbies, 124 Bennett St., Staten Island, NY 10302-1426; John Brown, (718) 727-2194



Capital District R/C Racers, 27 Venus Dr., Albany, NY 12205; Keith Green, (518) 783-7859



Central New York R/C Auto Racers, Martin St., P.O. Box 116, Rome, NY 13440; John Orr, (315) 336-5140



Competition Hobby Supplies, 1006 Loudon Rd., Rte. 9, Latham, NY, (518) 786-3622



East Coast Barn Stormers, MD #1 Old Oxford Rd., Chester, NY 10918; Michael or Lou, (914) 469-5883



East End Off-Roaders, 7335 Main Rd., Mattituck, NY 11952; Wally, (516) 298-2020



Jerry's Raceway, 111 S. Applegate Rd., Ithaca, NY 14850; Jerry and Lori Achilles, (607) 277-0940



LI 1/4-Scale Racers, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384



1/10 Raceway and Hobbies, 168 Broad Hollow, Farmingdale, NY 11735; George or Dora, (516) 845-7223



Performance Hobbies Raceway, 205 North Ave., Webster, NY 14580; Anthony Cenzi, (716) 621-1274



Peter's R/C Raceway, Rte. 36, Leicester, NY 14481; P. Gerald Scorsone, (716) 382-3126



R/C Competition Corner, K-Mart Plaza, Mattydale, NY 13211; (315) 455-8718



R/C Hobbies, Rt. 49, Box 138, Constantia, NY 13044; Roy Catholici, (315) 623-9536



R&S Hobbies, 356 Macedon Ct. Rd., Fairport, NY 14502; (716) 425-3722



Rampage R/C, 27 Fuller Ln., Hyde Park, NY; Brian Walker, (914) 229-2456



Ransomville R/C Raceway, 2576 Academy St., Ransomville, NY 14131; Irene Preisch, (716) 791-8310



Schoharie Co. R/C Car Club, P.O. Box 126, Cobleskill, NY 12043; (518) 234-4600



Small Torque Racers of Long Island, 24 Horton Dr., Huntington Station, NY 11746; George Franz, (516) 271-1119



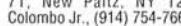
South Shore Hobby & Raceway, W. Roe Blvd., Patchogue, NY 11772; Don Hauck, (516) 758-5567



Transit Speedway & Hobbies, 5319 Transit Rd., Depew, NY 14043; (716) 684-7368



Ulster County Speedway, P.O. Box 71, New Paltz, NY 12561; Joe Colombo Jr., (914) 754-7664



Walt's Hobby, 2 Dwight Park Dr., Syracuse, NY 13209; (315) 453-2291



NORTH CAROLINA

Badin Shore Raceway, 1730 Jackson Lake Rd., High Point, NC 27263; Jimmy or Tim Martin, (910) 431-6407



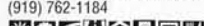
C/C Hobby Speedway, 8358 U.S. Hwy. 220 Bus. N., Randleman, NC 27317; Steve & Mary Cox, (910) 495-3482



C&H Raceway, 1400 N. Cannon Blvd., Kannapolis, NC 28083; Camera & Hobby Shop, (704) 933-5321



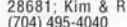
Cape Fear Speedway, 207 Harley Rd., Wilmington, NC 28401; Bob Justice, (919) 762-1184



Carolina Dragway, 907-D Warsaw Rd., Clinton, NC 28328; (910) 592-4569



Carolina Hobbies R/C Raceway, Route 1, Box 158, Taylorsville, NC 28681; Kim & Roseanne Kulawik, (704) 495-4040



Clapp's R/C Motor Speedway, Rt. 4, Box 300A, Siler City, NC 27344; Al Clapp, (919) 663-3198



Clinton R/C Raceway, 907-C Warsaw Rd., Clinton, NC 28328; Corbitt Marshburn (919) 592-9489



Hobbies, Etc., 5540 Atlantic Springs, Raleigh, NC 27604; Don Asplen, (919) 790-1444



Hobby Park, W. Clemmonsville Rd., Winston-Salem, NC 27103; Dick Butler, Parks & Recreation, (919) 727-2063



Motorlead R/C Raceway, 125 Park St., Canton, NC 28716; (704) 648-7911



Ride & Slide R/C Raceway, 5319 Yadkin Rd., Fayetteville, NC 28303; Jim Woodman (910) 425-5276 or Bill Culbertson (910) 867-4202



Rosewood Speedway, Rt. 5, Box 853, Goldsboro, NC 27530; Glenn Elam, (919) 731-4734



S&B Speedway & Hobbies, Rt. 1, Box 311A, Farmville, NC 27828; Ricky Strickland, (919) 753-4422



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- Indoor
- Outdoor
- Off-road
- Oval
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- Concrete
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- AC power
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Hobby Park Dragway, W. Clemons Rd., Winston-Salem, NC; Jack Wright, (919) 983-9416

**NORTH DAKOTA**

Hacienda Hills Speedway, 20 Hacienda Hills, Minot, ND 58701; Kenny Duchscherer, (701) 839-4419



Northern Mini Racers, 2105 North Broadway, Minot, ND 58701; Patrick McWethy, (701) 839-8868



Valley Hobbie, 1519 1st Ave. South, Fargo, ND 58103; Craig Sturm, Keith Johns, (800) 493-9971

**OHIO**

Aerotech Raceway, 409 Applegate Rd., North Canton, OH 44720; (216) 499-1300



C/R Hobbies/Top Race Track, 323 Center St., Ashtabula, OH 44004; Virginia Gagat, (216) 992-3833



D&J R/C Raceway, 801 W. Market St., Orrville, OH 44667; Don Yoder or Mark Nussbaum, (216) 682-4266



D&S Hobbies Raceway, 7701 Crile Rd., Concord, OH 44077; (216) 354-2112



Flag City Raceway, 3772 C.R. 18, Findlay, OH 45840; Ruth Hubbard, (419) 422-5589



Hobby Mania Raceway, 6597 Route 224, Lowellville, OH 44436; (216) 536-8282



Innovative Hobbies/Lakeside Speedway, 3427 Manchester Rd., Akron, OH 44319; (216) 645-1333



JB Hobby & Raceway, 8760 St. Rt. 201, Tipp City, OH 45371; Bob Curtis, (513) 845-8222



Kent Hobby, 832 N. Mantua St., Kent, OH 44240; Bob Sabo, (216) 673-0422



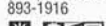
Lafferty R/C Raceway, Box 153, 70228 Hurrah St., Lafferty, OH 43951; Chris Christman, (614) 968-4818



Lewisburg R/C Raceway, 395 US Rt. 40E, Lewisburg, OH 45338; Gene Butler, (513) 678-9201



P.A.R.C.A.R., 632 Eckle Rd., Perrysburg, OH 43551; Bill Bridges, (419) 826-3859 or Dave Scanes, (419) 893-1916



Y-City Hobby & Speedway, 120 S. 6th St., Zanesville, OH 43701; Kevin McKenna, (614) 455-3025

**OKLAHOMA**

Adams Creek R/C Speedway, 5207 S. 194th E. Ave., Broken Arrow, OK 74014; John Beighle, (918) 355-1416



Competition R/C, 180 SE 89th, Oklahoma City, OK 73160; James Brown, (405) 634-0809



Coweta Hobby & Speedway, 310 S. Broadway, Coweta, OK 74429; Derald Seabolt, (918) 486-3948



Off-Road Car Assoc. of Tulsa, 9720 Swan Dr., Broken Arrow, OK 74014; George Gooch, (918) 486-4528

**OREGON**

Cathie's R.C. World 443 So. Calapooia, Sutherlin, OR 97479; Wes/Cathie Buzzard, (503) 459-2746



Competition Racing Assoc., 17941 NE Glisan, Portland, OR 97230; Mark Taylor, (503) 257-0796



Junior Vehicle Speedways, 3090 Starwood Ct., Medford, OR 97501; (503) 779-3090



North Lawrence Raceway, 36 N. Lawrence, Eugene, OR 97401; Gary Hill, (503) 484-9857



R/C Plus Hobbies Raceway, 2029 25th St. SE, Salem, OR 97302-1130; Ron Smith, (503) 364-9188



R/C Speed Center, 2810 N. Pacific Hwy., Medford, OR 97501; (503) 779-8298



Yamhill County R/C Car Club, 722 Morgan Ln., McMinnville, OR 97128; Larry Rucker, (503) 472-7234

**PENNSYLVANIA**

Brookville Hobby Shop, 170 Main St., Brookville, PA 15825; Mark Tonelli, (814) 849-7385



CEB Motors R/C Div., 5743 Molly Pitcher Hwy., Marion, PA 17235; Charlie Booze, (717) 375-4635



Clearfield R/C Car Club, P.O. Box 297, Clark Hill Rd., Hyde, PA 16843; Joe Welch, (814) 765-3045



Clearfield R/C Raceway, 4 Capricorn Ct., Clearfield, PA 16830; Shawn Richards, (814) 765-5608



Cressona Mall Speedway, Rt. 61, Pottsville, PA 17901; (717) 385-3506



DC Ultra Trax, 13 York Rd., Wycombe, PA 18974; David Cowan, (215) 672-5200



Dreamboat Hobbies, 2810 Pennsylvania Ave. W., Warren, PA 16365; Louie Dussia, (814) 723-8052



East St. Raceway, 736 E. Railroad Ave., Verona, PA 15147; (412) 826-0602



Henning Scale Models R/C Raceway, 128 S. Line St., Lansdale, PA 19446; Bill Henning, (215) 362-2442



Hipkins Hobbies Raceway, 402 W. Avondale-New London, West Grove, PA 19390; Doug Hipkins, (215) 869-8585



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Track Directory

Hobby America Raceway, 5 Fitzsimmons St., Duke Center, PA 16729; Dan or Mike Coast, (814) 966-3765



Hobby House Raceway, Downingtown Marketplace, Downingtown, PA 19335; J.T. Nelson, (215) 269-1300



Koontz's Home & Hobby Center, 1205 Hoover St., Pittsburgh, PA 15204; (412) 331-3866



Kranzel's R/C Raceway & Hobbies, 415-B Bosler Ave., Lemoyne, PA 17043; David or Stuart Kranzel, (717) 737-7223



Marshall's R/C Raceway, RR 4, Box 640, Honesdale, PA 18431; Bill or Dot Marshall, (717) 729-7458



Modellbahn Ott Hobbies, 1145 E. Philadelphia Ave., (Rt. 73), Gilbertsville, PA 19525; (215) 367-5925



Mr. Laurel Speedway, 835-8 Hiestler Lane, Reading, PA 19605; Joe Vaccaro, (215) 921-0176



The Mushroom Bowl, 812 W. Cypress St., Kennett Square, PA 19348; Joe, Bruce, or Drew, (610) 444-1850



Pinion Twisters, 3M Plant, Green Ln. and Mitchell, Bristol, PA; John (215) 632-9744, Bob (215) 945-0325



Pro Challenge Raceways, Wycombe Ave. (P.O. Box 536), Lansdowne, PA 19050; Bob Paulavage and Don Fewkes, (610) 622-7651



Prop & Wheels Raceway, 139 W. Broad St., Tamaqua, PA 18252; Gil Walters, Prop & Wheels Hobbies, (717) 668-2288



R/C Pro Speedway, Milville Rd., Bloomsburg, PA 17815; Norm Swisher, (717) 387-0266



R/C Raceway, 519 Broadway, Hanover, PA 17331; Chris Shaffer, (717) 633-9490



Riverside Raceway, PA Ave. W & Hickory, Warren, PA 16365; Jeff, (814) 723-4211



Road Runner Raceway, 1027 E. 7th St., Bloomsburg, PA 17815; Rochelle Warhurst, (717) 784-1260



S.A. Hi Banks, Hahn's Dairy Rd., Palmerton, PA 18071; Scott Andrews, (610) 377-6123



Sinking Spring Race Center, 237 South Hull St., Sinking Spring, PA 19608; Randy Gelsinger, (610) 670-0760



South Mountain R/C Speedway, 357 Furnace Rd., Wernersville, PA 19565; George Merkel, (215) 267-4736



Staub Bros. R/C Speedway, 31 Locust St., Gettysburg, PA 17325; Todd or Scott Staub, (717) 334-5445



TC's R/Cs, 1537 Freeport Rd., Natrona Heights, PA 15065; Tom Coriale, (412) 226-8802



Wagonhill Hobbies, 967 New Castle Rd., Rt. 422, Butler, PA 16001; Jeff Hyatt, (412) 865-9877



PUERTO RICO

Hacienda Muñoz R/C Track, Carr. #14, Juana Diaz, PR 00795; (809) 837-7083



RHODE ISLAND

Tri-State R/C Raceway, 205 Hallene Rd., Warwick, RI 02886; Raymond Dean, (401) 738-4908



SOUTH CAROLINA

Bandit's Performance R/C Hobbies, 2037 S. Main St., Darlington, SC 29532; Bryan Howle Jr., (803) 393-3333



Coastal R/C Speedway, 8553 Hwy. 544, Myrtle Beach, SC 29577; Wendell Smith, (803) 236-9309



R/C Speed Shop & Raceway, 2122 Platt Springs Rd., W. Columbia, SC 29169; Eric Prevost, (803) 791-4715



SOUTH DAKOTA

Dakota Off-Road Racers, 2989 W. Br. Co. 12, Aberdeen, SD 57401; (605) 226-0604



TENNESSEE

Action Hobby Shop, 3723 S. Mendenhall, Memphis, TN 38115; Brian Stricklin or Justin Austen, (901) 365-2620



Cumberland Valley Raceway, P.O. Box 233, Ashland City, TN 30715; Jamie Pate, (615) 792-4371, ext. 1195



D&M's Downtown Raceway, 2703 US Hwy. 411S, Maryville, TN 37033; (615) 681-8919



Machine-Head Straits, 938 Grandmere Rd., Lawrenceburg, TN 38464; Larry and Eliane Sanders, (615) 762-6630



MSA R/C Racing, Rt. 12 Box 489 B, Crossville, TN 38555; D.R. Findley, (615) 456-0027



Robertson's R/C Raceway, 175 Seavers Rd., Jackson, TN 38301; Travis Robertson, (901) 424-6423



Tri-County R/C Raceway, 919 Little Dogwood, 1312 Kingston Hwy., Kingston, TN 37763; Dwaine Romine, Kyle Romine, (615) 376-2330, 376-9955



TEXAS

Austin R/C Center, 9702 Gray Blvd., Austin, TX 78758; Caton Cobb, (512) 832-8144



Eastex Raceway, 45000 Hwy. 59 N., New Caney, TX 77357; Heinz Falke, (713) 399-1527



Hal's Hobby Raceway, 1440 Bessemer, El Paso, TX 79936; (915) 591-2213



Heart o' Texas Hobbies & Raceway, 309 W. Hwy. 190, Copperas Cove, TX 76522; Larry Gholson, (817) 547-7505



Hobbycraft Speedway, 819 N. Main St., Corsicana, TX 75110; Keith Hoffman, (903) 872-6761



Houston R/C Hobbies, 6338 Skyline Dr., Houston, TX 77057; Lynn Cramer, (713) 266-6006



Indy R/C World, 220 Mesquite Village, Mesquite, TX 75150; (214) 271-4844



Rivercity Speedway, 11731 Wetmore, San Antonio, TX 78247; Ralph Hernandez, (210) 359-6870; Joe Toledo, (210) 341-5652



Star/Car Raceway, 5802 Patton St., Corpus Christi, TX 78415; Mike Hellums, (512) 289-0066; Race Hotline, (512) 881-6105.



Star Hobbies, 1200 Hwy. 100, Box 5, Port Isabel, TX 78578; Fred Carr, (512) 943-7546



T&T Eagle, 161 W. Spring Creek Pkwy., #601, Plano, TX 75023; Tony Welborn, (214) 517-0562



Texas Speedway, 6707 Chimney Rock, Bellaire, TX 77401



Wild Bill's Raceway, 535 E. Shady Grove, Irving, TX 75060; Lynn Morgan or Jerry Williams, (214) 438-9224



UTAH

Hansen Intermountain R/C Raceway, 8481 W. 2700 S., Magna, UT 84044; Kevin Hansen, (801) 250-8303



Power Hobbies and Raceway, 135 No. 900 E., Suite 7, St. George, UT 84770; April Nutley, (801) 628-8747



VERMONT

Mike's Hobbies & Raceway, 162 N. Main St., Rutland, VT 05701; Stephen Rachlis, (802) 775-0059



Stoughton Pond Raceway, Stoughton Pond Rd., Perkinsville, VT 05151; Rick Adams, (802) 263-9321



VIRGINIA

Bob's Hobbies & Raceway, 910-J Brandy Creek Dr., Mechanicsville, VA 23111; Bob Wagner, (804) 746-2758



Cooper's R/C Raceway, Rt. 4, Box 122B, Chatham, VA 24531; (804) 724-4182



Crossroads Hobbies R/C Raceway, 1104 W. Main St., Salem, VA 24153; Ronnie Black, (703) 387-3414



Fairstone R/C Speedway, Rt. 4, Box 918, SR635, Stuart, VA 24171; Pat Moon Jr., (703) 930-3984



Track Directory

The Hobby House, 116 Edds Ln., Sterling, VA 20165; Ron Beckman, (703) 444-0333



KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596



Timberlake Hobbies, 1400 Atlantic Ave. #201, Virginia Beach, VA 23451; Doris Cruea, (804) 491-8016



Trackside Hobbies, 1314 E. Pembroke Ave., Hampton, VA 23669; Rick Cardwell, (804) 723-4170



WASHINGTON

Allie's, 108 South K St., Aberdeen, WA 98520; (206) 533-6638



Four Season R/C Racing, 2941 Sleater Kinney Rd. NE, Olympia, WA 98506; Gary & Sharon Brown, (206) 491-2430



Hale's R/C Raceway Park, 10611 136th St. E. Puyallup, WA 98374; Walt Hale, (206) 845-7675



Home Town Hobby, 116 N. Main Ave., Ridgefield, WA 98642; (206) 887-1769



L&L R/C Raceway, 15818 S.E. 287th, Kent, WA 98042; Bob Lewis, (206) 631-1664



NORA Performance R/C, P.O. Box 955 (1673 Cedardale Rd.), Mt. Vernon, WA 98273; (206) 755-9464



Raceway Hobbies, 188 Sunset Ave. S., Edmonds, WA 98020; Dave or Ron Steen, (206) 774-3285



Schmidt's Auto Parts, 10305 Old Hwy. 99, Marysville, WA 98271; Jon Failla, (206) 653-8838



Spokane Indoor Raceway, 6422 E. 2nd Ave., Spokane, WA 99212; Dave Matson, (509) 534-RACE



Tacoma R/C Raceway Hobbies, 6305 6th Ave., Tacoma, WA 98406; Neil Bade, (206) 565-1935



Terror Raceway, 8012 S. Tacoma Way, Tacoma, WA 98499; Dave Kleinman, (206) 584-8659



WEST VIRGINIA

Burr-Fab Raceway, 90 Davis St., West Union, WV, 26456; Mark Travis, (304) 873-2487



Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355



WISCONSIN

ABC R/C, 1441 B East Main St., Waukesha, WI 53186; Dick, (414) 542-1245



Antigo Hobby, 311 Superior St., Suite 7, Antigo, WI 54409; (715) 623-7655



Bayland Hobbies, 9510 Ashwaubenon, Green Bay, WI 54304; Dan or Jay Boettge, (414) 339-8288



JJ's Dirt Heaven, 6028 County K, Champion, WI 54229; (414) 637-9096



R/C Hobby Off-Road Track, Lewison Lane, Viroqua, WI 54665; Dan and Diane Sawvell, (608) 637-8221



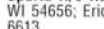
Radio Mania, 129 Harrison St., North Prairie, WI 53153; Bill Bowes, (414) 392-9515



S&N's Trackside Hobbies and Raceway, 6045 N. Green Bay Ave., Milwaukee, WI 53209; Scott Ernst, (414) 351-1910



Sparta R/C Raceway, R&S, Sparta, WI 54656; Eric Johnson, (608) 269-6613



WYOMING

Collectable Creations Off-Road Oval Track, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156



AUSTRALIA

Wodonga R/C Car Club, 11 Murphy St., Wodonga, VIC 3690; Ron Langman, 011-6160-247-128

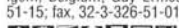


Aubry R/C Car Club, Aubry Showgrounds, Aubry, NSW 2640; Ron Langman, 060-247-128



BELGIUM

Cartroubles Indoor Buggy Track, Jan Moonsstraat 52-56, 2160 Wommegem, Belgium; Guy Ermes, 32-3-326-51-15; fax, 32-3-326-51-01



Model Racing Club Oudenaarde, Schelddekant, 9700 Oudenaarde, Belgium; A. Chanterle, 32-55-31-36-48; fax, 32-55-30-19-12



BRAZIL

Brasilia R/C Motor Circuit, Estacionamento do Estadio Mane Guarrincha, Brasilia, DF 70000, Brazil; Alexandre (Alex), 55-061-273-7205



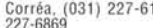
Hobby Center, SQS.210 Bl.H Apt. 204, Brasilia, DF-Brasil 70.273; 061-242-0488



Off Roaders, Av. Guillermo Dummont Villars, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931



Way of R/C Off-Road Cerrado, Rua Paraiba 1323, 1st floor, Belo Horizonte, Minas Gerais; Claudio T. Correia, (031) 227-6111, fax (031) 227-6869



Strathclair Park, Old Garden River Rd., Sault Ste. Marie, Ontario P6A 5T1; (705) 759-1855



CANADA

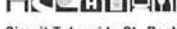
Action Weelz, 462 Turcotte, Vanier, Quebec, G1M 1R6; Regent Tardif, (418) 527-5756



ATN, Auto Teleguide Nicolet, 2000 Rue Paul Hubert, Saint-Jean-Baptiste-de-Nicolet, Quebec J3T 1E5; Louis Durand, (819) 293-6097



Circuit Pepsi, Centre de Location, 37 du Roi, Sorel, Quebec; (514) 746-8828



Circuit Teleguide St. Roch, 363-B St. Charles, St. Roch De L'Achigan, Quebec J0K 3H0; (514) 588-4254, fax (514) 588-6554



Club RCSI, 44 Rue Holliday, Sept-Iles, Quebec G4R; Sylvio Gerard (418) 968-6575; hobby shop (418) 962-6565



CRCCC, Box 309, Clinton, Ontario NOM 1L0; Eric Russell (519) 482-9429



East Coast Model Center Raceway, 13 Glen Stewart Dr., Suite 1, Southport, Prince Edward Island C1A 8X9; Gary Stephen, (902) 569-3262



Evolution Speedway, 1935 Glengrove Rd., Pickering, Ontario L1V 1X3; Eric Lang, (905) 839-2084



Fast-Trax Speedway, RR 4, Trenton, Ontario; Russ McPeak, (613) 394-6411



Hobbypro Raceways Ltd., 16020-132 Ave., Edmonton, Alberta T5V-1M1; Tony or Ian, (403) 455-RACE (7223)



Honda House Motor Speedway, 384 Richmond St., Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530



Interior R/C Raceway, 34-1605 Summit Dr., Kamloops, BC, V2E 2A5; Martin Vannieuwenhuizen, (604) 374-1268, (604) 374-8458



J-T International Raceway, 127 Milligan Lane, Napanee, Ontario K7R 8A1; N. O'Neill, (613) 354-0099



MORRAC Raceway, 6449 Crowchild Tr. SW., Box 36060, Calgary, Alberta T3E 7C8; (403) 254-1386



Prince George Radio Controlled Car Club, 202 Explorer Cres., Prince George, B.C. Y2M5R8; Doug Waller, (604) 561-0035



Quintrax Speedway, 610 Dundas St. East, Belleville, Ontario K7K 2M1; (613) 962-1414; fax (613) 962-7306



Rousillon Hobby Track, 177-D St-Jean Baptiste, Chateauguay, Quebec J6K 3B4; (514) 696-2151



South Okanagan Roadhogs, Skha Lake Rd., Penticton, BC; Willie Lemm, (604) 492-5698



Strathclair Park, Old Garden River Rd., Sault Ste. Marie, Ontario P6A 5T1; (705) 759-1855



Thunder Alley Raceway, Lambton Mall, 1380 London Rd., Sarnia, Ontario N7S 1P8; Rob Smith, (519) 882-3361



COLOMBIA

Club De Automodelismo Colombiano, Centro Recreativo Cafam, Kilometro 14 Autopista Norte, Santafe De Bogota, D.C. Colombia; Jorge Delgado, 1-6130588



Club De Automodelismo Colombiano, Centro Comercial Guaymaral, Kilometro 16 Autopista Norte, Santafe De Bogota, D.C. Colombia; Jorge Delgado, 1-6130588



Garoso Raceway, Avenida Libertadores con Diagonal Gran Colombia, Cucuta, Colombia; Gabriel Rodriguez, 975-751892



DENMARK

Holstebro R/C Buggy Club, Mozartsvej 7500 Holstebro, Denmark 2600; Michael Brusholt, 011-45-97-412-734



Klub 144 Raceway, Bagsvaerdvej 144A, 2800 Lyngby, Denmark, Henrik Carstens, 45-42-88-3691



Rainbow Raceway, Eriksvej, 9 Glostrup Copenhagen 2600; P. Christiansen, 011-45-52-848-504



Thor Minirace Odense, Sohusevej 255, Allose, Odense, Behind Alesso Hallen (Sport Centre), Odense, Denmark; Ulrich Rasmussen, 011-45-65-303-707



ENGLAND

Chessington Radio Car Club, Surbiton Sport Club, Riverhill Estate, Worcester Park Rd., Worcester Park, Surrey, England; Ian Spiller, 0252-20657



FRANCE

Auto Electron, 35, rue B. de Ventador, Limoges, France 87000; M. Boudoul, 55 062763



Lorgies Bolides, rue Beau-Riuz, 62840 Lorgies, France; Mme. Hourdequin Sabine



GERMANY

MC Koln, Bottgerstr., Worringen, Germany 50769; Ralf Habel, 02733-477493



Mini Car Club Dortmund, Kortschstr. 4, 4600 Dortmund 13, Germany; Roland Schwan, 0231/213609



Oberhausen-Altstaden, Am Fersderturn., Oberhausen, Germany 46099; Josef Holl, 0208-403676



Stoppelhopser Oberhausen, Niebuhrstr., Oberhausen, Germany 46049; Matthias Reckward, 02801-1545



HONDURAS

Autodromo Accion, Quinta Santa Maria, San Pedro Sula, Honduras, Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061



HONG KONG

H.K.R.C. Model Car Racing Club, Lot 2130-2137, Ko Po Tsuen, Sha Tau Kok Rd., N.T., Hong Kong; Alex Chan, (852) 659-2822

Hansen Off-Road, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 011-81-61173-53674



Iwakuni R/C Track, PSC 561, Box 978, FPO AP 96310-0978; David T. Eck, 011-81-6117-53-3662



Misawa R/C Raceway, 13th Fighter Squadron, PSC 76, Box 2585, APO AP 96139-2585; 011-81-176-53-5181, ext. 226-6506



Yokata R/C Racers, Yokata Air Base, Tokyo Fussa-Shi, Japan 96326; June Uchiyama, 0425-54-6942



Zama Off-Road Raceway, 17th ASGCM Unit 45013, Box 3232, APO AP 96338 Japan; SFC Ken Campbell, 011-81-3117-63-8478



MEXICO

Alces Off Road, Lopez Mateos y Rayod S/N, Ensenada, Baja California, BC 22830; Jorge Bustamante, (667) 6-1476, 61477, 86729



Baja Jr., H. Valdez 151 Pte. Y Gmo. Prieto, Los Mochis Sinaloa 81200; Memo Asencio, Gaby Macias, 681-20276; fax, 681-26430



Hobby Centro, 12 De Diciembre No. 3070-A, Guadalajara, JAL 45550; Alejandro Ortiz Del Toro, (36) 21-46-28



Hobby's Formula, Au observatorio 457 DF 01120; (905) 502-3620



Hobby Model's Raceway, Blvd. Garcia de Leon, 1555, Morelia, Michoacan 58260; (431) 5-01-22



Jaguar R/C Club, Calz. Zavaleta 116, Puebla 72150; Chema, Denise or Chiro, (22) 31-00-91, (22) 33-00-94



La Hielera, Prol Corregidora Nte 350, Queretaro, QRO C.P. 76160; Jorge Morelos Rabell, (42) 12-15-25



Pista Casino, Hotel Casino de la Selva, Cuernavaca, Morelos 16507; Luis Duhart, (73) 19-12-38



R/C Racing Club, Obsidiana #2900, Zapopan, Jalisco 44560; Fernando Hernandez, (3) 616-73-47



Tony's Track, Obregon 364 Sur, Culican Sinaloa; Guillermo Prieto, (67) 165708-168141



NETHERLANDS

H.F.C.C. Hollandia, De Werf 60, The Hague, The Netherlands; G. de Jong, 031-070-3679820



NEW ZEALAND

Counties R/C Raceway, Pukekohe Showgrounds, Station Rd., Pukekohe, New Zealand; R. Northcott, 09 23 86904



Papakura Indoor R/C Car Club, 25 Tainere Cres., Papakura, Auckland; Colin Perry, (09) 298-4711



Western District R/C Off-Road Car Club, CNV Bancroft/Akatea Prive, Auckland; Chris, (09) 838-5201



NORWAY

Dalen Raceway, P.B. 728, 6401 Molde, Norway; Johnny Reitan, 94 64 52 95



PHILIPPINES

Boyer R/C Hobby Shop, Unit No. 10 Lucas Commercial Center, Marcos Hiway, Mayamot, Antipolo, Rizal; Jose "Boy" Chua, 721-2555



Philippine R/C Association, B.F. Homes Paranaque, Metro Manila 1700; Ronald/Manny Villafior, 23-30-08



SOUTH AFRICA

Gordons Bay R/C Club (GBRC), Andrew Norman Sports Centre, Gordons Bay, Cape Province; Andre Hollander, 024-512865



SPAIN

Club Social Sevillana, Crta. Pulianas S/N, Granada, Spain; Oscar Saenz, 958-275282



Motoclub Castellon R.C., Rafalafena, S/N, 12004 Castellon, Spain; Octavio Traver, (34) 64 229705, (34) 64 237411



Outlaw-Ultima II, Puerto Rico 27, Madrid, Spain 28016; Juan Vacas, (34) 915197298



ROARCR, Naval Station, Rota, Spain (P.O. Box 53, FPO NY, NY 09540-0013); PO Kelly Sexton, 011-34-56-822652



CRACR, La Elipa, Madrid, Spain; Pablo Llorente, 91-3865952



SWITZERLAND

E.M.B.C.M. Raceway, Main Street, opposite police station, 8854 Siebnen, Switzerland; Markus Schmid, 01-9233621



JMRCV-Terraindu Levant, Chemin ou Levant, 1290 Versoix, Geneva, Switzerland; fax, 19 41 22 7790805



VENEZUELA

Las Fuentes R/C Club, 2da Calle las Fuentes El Paraiso, Caracas, DF 1020; Franco Agrusa, (02) 461-72 55



R/C Mariche, KM4 Zona Industrial, Del Este Via Mariche, Caracas, DF 1070-A; Bruno Morganti, 58-02-241-3969 or 241-4993



Robin R/C Racing Club, Avenida Bolivar CC Luz #1, Valendia, Edo., Carabobo; Fernando Leon, (041) 223997 or 222386



WEST INDIES

Island Raceway, 8 Mile Post Jacks Hill, St. Andrew, Jamaica, West Indies; Rodney Littau, (809) 926-7034 or 927-1198



ZIMBABWE

Mosi-Oa-Tunya, H9619 Highland Harare, Harare Country, Masloraland, Zimbabwe; 46237



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CHRIS'

BACK LOT

Back-Lot Babes

This is my page—mine!

The opinions expressed on this page do not necessarily represent the opinions of the entire *Car Action* staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o RCCA, 251 Danbury Rd., Wilton, CT 06897.

Below: This month's Back Lot wouldn't be the same without the great smile of lovely Miss SoCal Raceway, Renee Brown. Posing at the R.O.A.R. Truck Nats with Renee is (from left)—Doug Brown (no relation), Team Losi's Gary Keyes and the infamous Bob

"Billy Jack" Novak.



Yeah, I know what some of you are thinking: "Chris, you're a pig!" Oh well. No matter how hard I try, I never could get that politically correct garbage quite right. Let us for just a moment (or just an issue) yield to the logic. Do you think fast cars are the only things boys like? Boys like girls—pretty girls—with athletic bodies. That's the way it is. Who am I to try

and change things; moreover, why would I want to? My mother always told me that if everyone likes and approves of you, you're doing something wrong, or just not doing anything at all!

It all started with last month's "Back Lot." It dealt with a serious issue—one I feel very strongly about. I got so wrapped up in it that my friends started telling me that I was becoming a bore and too serious about things. You know, kind of like the way lawyers are. That's all I had to hear. Anyway, every action has an opposite and equal reaction, so this month, I give you the back-lot babes of R/C. For those of you who are offended, don't worry, I'll probably be cured by next month. I must confess, however, my affliction is chronic and relapse is a constant threat. I do want you to know one thing: everyone appearing on this page, except the guy with the X-ray glasses, has something to do with racing.

How about that Brian Kinwald, folks. He is the man, the "King Off the Road." Who says you can't get girls racing R/C? See this month's "Inside Scoop" for details about the conquests of the B.K. Broiler. Don't forget, send me pictures!

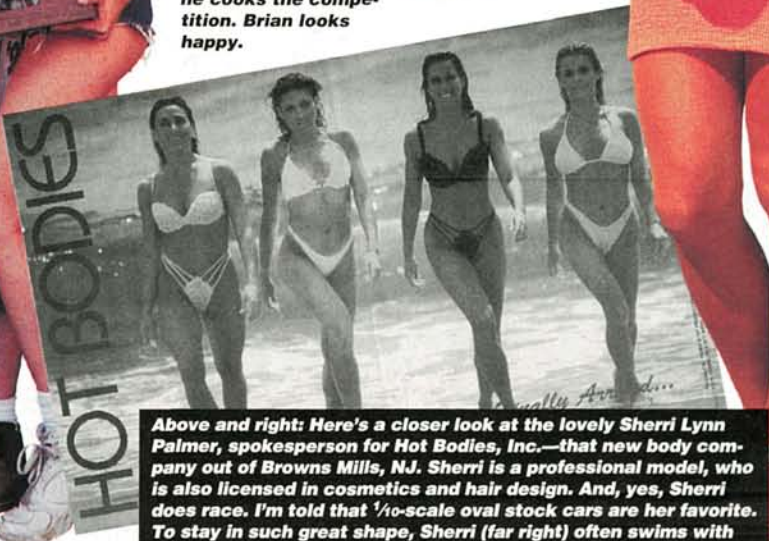


I used to advertise to sport trucks & they had nice pictures of girls & I changed to your MASAC 100 so that's pretty good.



I lied in the introduction paragraph. This 12-inch plastic model of an Amazon women has absolutely nothing to do with racing. My page—mine!

Left: In the winners' circle again (this time with Carla Scott) is the "B.K. Broiler." They call Brian the "Broiler" because he cooks the competition. Brian looks happy.



Above and right: Here's a closer look at the lovely Sherri Lynn Palmer, spokesperson for Hot Bodies, Inc.—that new body company out of Browns Mills, NJ. Sherri is a professional model, who is also licensed in cosmetics and hair design. And, yes, Sherri does race. I'm told that 1/10-scale oval stock cars are her favorite. To stay in such great shape, Sherri (far right) often swims with her girlfriends. I'll keep you updated on Sherri and Hot Bodies' latest product releases.

